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Some Recent Advances IN ORTHOPÆDIC SURGERY.

Presidential Address delivered at the First Meeting of the Section of Orthopædics of the Royal Society of Medicine.

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THE progress of orthopædic surgery from its inception in 1741 by André to the present day has had many vicissitudes. André defined it as "the art of preventing and correcting bodily deformities in children." This Section has been instituted for dealing with "the surgery of congenital and acquired deformities of the extremities and spine." Our scope has advanced in one very important point and one only; we refuse to admit any age-limit to the benefit of our art, but the problems that confront us to-day and our means of alleviation are very different. Many of the results of progress in orthopædic surgery are still too recent to be viewed in their proper perspective, but the present time, when we have earned for our art its proper recognition among the branches of surgery, is fitted for a brief review of success and failure.

SOME ERRORS AND THEIR CORRECTION.

In common with every phase of surgical knowledge orthopædic surgery has had many obstacles to overcome. The earlier endeavours to correct deformity by mechanical appliances were often attended by failures, due to lack of knowledge of pathological anatomy, which tended to discredit a method most useful when applied in suitable cases. It is employed at the present time by us all, and, with proper discrimination, will continue to give relief for all time. The employment in the place of steel of the lighter compound duralumin for certain instruments has proved an advance. The advantages of subcutaneous surgery were great and remain so to the present, but this again has been employed without due consideration of the pathological anatomy of the deformity, and its intrinsic merit has been confused. It is a fact, scarcely credible to-day, that 25 years ago hallux valgus complicating osteo-arthritis was treated by subcutaneous tenotomy of the extensor hallucis. The benefit to surgery in general resulting from the discoveries of anæsthesia and antiseptic principles were but slowly taken advantage of by orthopædic surgeons; the advent of X ray examination, together with the safer technique of aseptic surgery, has been the most potent factor in recent advances, removing the treatment of many deformities from the realm of empiricism to the assured position of scientific achievement. Another advance is due to the coördination of the several departments. The coöperation of neurologist, pathologist, and physio-therapist have contributed to the solution of many orthopædic problems. The physio-therapist has improved his treatment by the introduction of new methods of great importance and his means of differential diagnosis have acquired greater accuracy.

Nerve Sutures and Transplantation.

The results of nerve sutures were formerly marred by contractions and atrophies; to-day by combining the treatment and after-treatment under the same coördination, whether in the person of one or more, the final functional results are infinitely better than those previously obtained. And when we add the functional benefit of re-education we can more fully grasp the necessary interdependence of the several departments. The technique of nerve suture has been advanced by displacement of nerve trunks and by separation of individual motor fibres from the trunk, so that greater gaps can be closed by direct end-to-end apposition. Transplantation of nerve has not been justified by results. In irreparable nerve injuries transplantation of tendon has obtained truly marvellous results, especially in cases of musculo-spiral paralysis where the transfer of the pronator radii teres, flexores carpi radialis and ulnaris give results in which the completeness of restoration of function is limited only by diminished dynamic force. So brilliant are some of these results that the same benefits are sometimes expected in less suitable cases. I wish to emphasise the fact that there is not a successful method of tendon transplantation for every nerve injury, and that trick movements of some muscles are often more efficient substitutes than transplanted tendons. Not quite the same can be said for tendon transplantation in anterior poliomyelitis. It is still a disputable point whether transplanted synergic muscles can function as prime movers, and it is almost certain that antagonists cannot. It must always be remembered that the transference of a tendon may remove a deforming force and so establish a better muscle balance without adding active power to the part. Only careful investigation of the end-results of a large series of cases of transplanted tendons will determine this point.

The appointment of commissions to examine end-results marks a considerable advance in our procedure for acquiring unbiassed information, and is especially applicable in orthopædic surgery, where prolongation of life is not the criterion of success or failure.

IMPROVEMENTS IN VARIOUS OPERATIONS.

Amongst the advances in the treatment of the distorted foot of anterior poliomyelitis must be reckoned the knowledge of the site of deformity for which arthrodesis is performed. Not long ago arthrodesis of the ankle-joint was advocated; it has now been recognised that arthrodesis of the ankle is often unsuccessful, and when successful unsatisfactory, and stability operations attacking the subastragaloid and mid-tarsal joints are found to give more satisfactory results. Whitman's operation as practised to-day is a distinct advance upon his previous operation. It will always remain a question of individual judgment and experience whether, in any given case, an attempt should be made to obtain an equalisation of muscle balance or stabilisation by one or other of these bone operations; in selecting a method, preference should be given to that which retains an elastic foot.

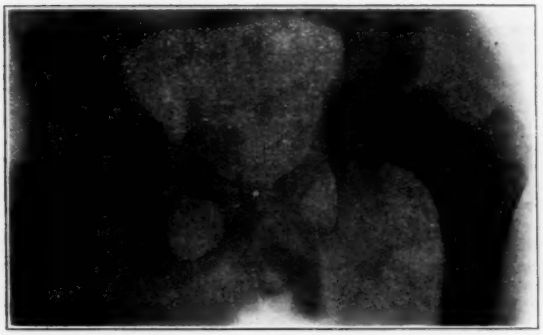
In congenital dislocation of the hip great advances have been made in treatment. It has been established that manipulative replacement and retention by plaster-of-Paris can achieve an anatomical cure in a fair proportion of cases treated in the earlier years of life. Knowledge obtained by X ray examination has been invaluable in elucidating the problems which beset this treatment and the changes in the joint components which constitute the cure.

Of any advance in the treatment of congenital club-foot it is more difficult to speak; the literature is full of new successful methods and our out-patient departments are full of relapses. In infancy little advance has been made upon the teaching of Hippocrates that the foot should be moulded like a piece of wax. Any attempt to correct the deformity in early childhood by removal of bone is unnecessarily mutilating to the normal elastic function of the foot, and is to be condemned. The same may be said of Phelps's operation, which its author performed 1650 times in 22 years, at any age over four months; this operation is useful in a few properly selected cases of relapsed club-foot, but not in the measure employed by its author. Astragalectomy has been praised and condemned. If, after astragalectomy, displacement backwards of the foot is performed, so that the malleoli engage the lateral aspects of the mid-tarsus, the results are quite satisfactory. But perhaps the greatest advance lies in application of the knowledge of the various pathological conditions and the recognition of suitable methods of treatment in each group.

Bone-grafting.

A great addition to our methods of restoring function has been the employment of bone-grafts in ununited fractures of long bones. Since 1915 bone-grafting has

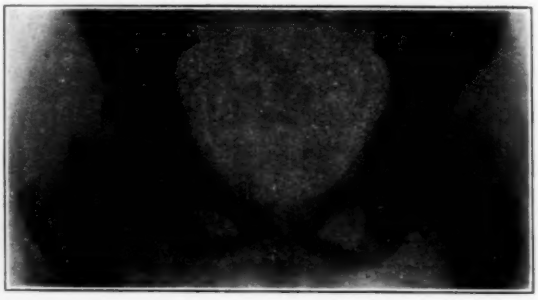
FIG. 1.



Bone destruction involving capital epiphysis and acetabular roof.

been more extensively used than in all time before; and, though theoretical considerations are still under discussion, the practical application has been advanced by the stimulus of necessity. Methods are not yet standardised, and work is still needed to determine the relative advantages of intramedullary implantation, the slotted bed, and lateral apposition. The results of the implantation of a free graft—i.e., a graft free from bony contact at one end, as in replacement of the whole upper end of the humerus—have marked a great advance. The hopes raised by bone-grafting of the spinous processes in caries of the spine have been proved too high; the employment of this operation should be limited to a small number of specially selected cases. At present our mainstay of treatment

FIG. 2.



Bone destruction involving capital epiphysis and femoral neck.

and to the prevention of true scoliosis. The treatment of fixed deformity by frame extension and fixation in plaster-of-Paris has been disappointing. With regard to infective arthritis, the recognition of oral sepsis has helped to stay secondary deformities. The treatment of bone cavities and bone tunnels in chronic osteomyelitis has been advanced by Broca's radical operation. Vaccine therapy does not seem to play an important part in such conditions.

Arthroplasty, &c.

The treatment of ankylosis by arthroplasty has advanced beyond the experimental stage and offers an extensive field for original work. There are still many divergent opinions about cases suitable for arthroplasty

FIG. 3.

Flattening of capital epiphysis with destruction and displacement of its cancellous bone.

of spinal caries consists of immobilisation and fresh air; and any improvements in the treatment of tuberculous disease of bones and joints in general lie in greater facilities of open-air treatment and more efficient and specialised nursing.

Posterior Root Sections, &c.

Posterior root sections have, on the whole, proved disappointing; when employed for the relief of spasm in spastic paralysis the operation has not achieved its object except after the most careful after-treatment by exercises and re-education, which factors have confused the issue of the operation itself. The method of excision of the nerve fibres supplying the spastic muscles, especially for adductor spasm, has proved a useful addition to our therapeutic measures in these cases.

Our increasing knowledge of the life-history of endosteal tumours has served to differentiate the benign from the malignant, and has permitted successful local removal in many cases.

Advances in the treatment of scoliosis lie rather in its prevention than in its cure. The early recognition of spinal asymmetry in school inspections has led to early treatment by exercises, postures and re-education,

FIG. 4.

Bone destruction of capital epiphysis and femoral neck.

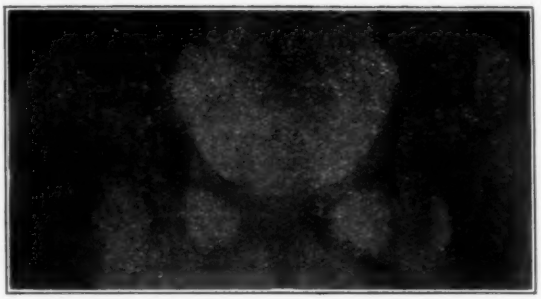
and the nature of the operative technique. In the treatment of ankylosis of the joints of the hand, new methods by traction and splintage have proved highly successful. The recognition of the deforming influence of reflex muscle spasm upon an unsoundly ankylosed joint has led to a diminution of cases formerly seen, which showed severe adduction and flexion deformities after the cure of tuberculous hip disease.

The hopes that were raised that kinematic amputation stumps would increase the functional use of artificial limbs have not been maintained. A real advance in prosthesis has been reached for amputation through the hip-joint by the fitting of a tilting table to the artificial limb. The elaboration of prosthetic appliance for the upper extremity has been useful, but unfortunately the majority of patients are unable or unwilling to adapt themselves to the advantages of the appliances supplied.

Osteochondritis Deformans Juvenalis.

Not the least interesting problem before us is the ultimate fate of the capital epiphysis and femoral neck in cases of osteochondritis deformans juvenalis. Calvé, writing in 1910, insisted upon the total absence of bony destruction as a characteristic of

FIG. 5.



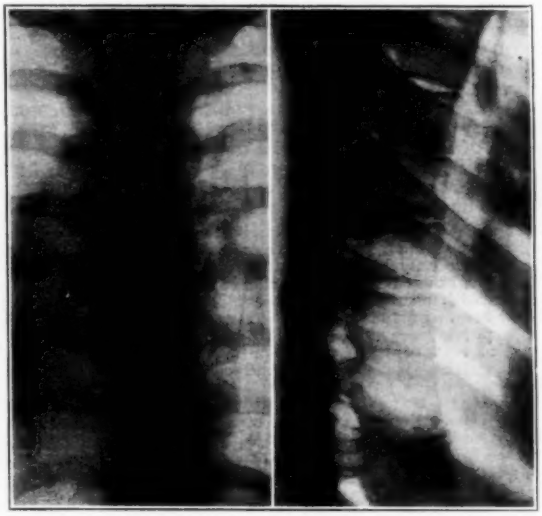
Neck varoid, capital epiphysis flattened and spread. Affection extending to lesser trochanter.

the disease. This led us to regard the disease lightly and to treat it inefficiently. Our knowledge has advanced, and we appreciate the occurrence of bone destruction. The four following cases illustrate this point.

W. F., male, aged 14, complained of "rheumatism in the groin" for 18 months which was accompanied by a unilateral limp. X ray examination showed bone destruction involving the capital epiphysis and acetabular roof (Fig. 1).

C. D., male, aged 10, complained of limp of 12 months' duration; pain had been very slight and confined to the

FIG. 6. FIG. 7.



Dorsal spine showing kyphotic deformity, perhaps due to osteochondritis; illustrating value of lateral views of vertebral bodies.

hip. X ray examination showed bone destruction involving the capital epiphysis and femoral neck (Fig. 2).

R. P., male, aged 5½, complained of pain in left knee of one year's duration with slight limp. X ray examination showed flattening of the capital epiphysis with destruction and displacement of its cancellous bone (Fig. 3).

D. B., male, aged 9, after two years of inefficient treatment showed bone destruction of the capital epiphysis and femoral neck (Fig. 4).

The recognition of this fact has advanced our method of treatment by the employment of mechanical means to relieve the parts of pressure, as by a Thomas ambulatory splint, or, in more advanced cases, by rest and extension. The evolution of these cases is still uncertain, and the incidence of subsequent osteo-arthritis seems inevitable.

Fig. 5, taken from a girl of 11, shows the end-result of an osteochondritis of the hip after four and a half years' treatment by extension as for a tuberculous disease. The neck is varoid and the capital epiphysis flattened and spread. Attention is drawn to the condition of the centre for the lesser trochanter, which is small and opaque and resembles the appearance of a scaphoid as seen in Köhler's disease. I suggest that the affection, whatever its nature, extended in this case from the neck and capital epiphysis to the centre of the lesser trochanter.

Is it not possible that the same disease is accountable for a class of kyphotic deformity of the spine which has hitherto been regarded as tuberculous? I refer to cases of kyphosis, usually in the dorsal region, of insidious onset, without acute pain, in which the curve involves four to six vertebræ, and of which the angle is rounded. Clinically such cases show few progressive signs and are not attended with abscess formation. I suggest that such cases should be examined by X rays in the lateral position with reference to any changes in the epiphysial plates. Figs. 6 and 7 are X rays of such a case, and the suggestion is made that the changes are due to osteochondritis. The present perfection with which lateral views of the vertebral bodies can be taken opens up to us now a new method of examination which has previously been denied us in the ordinary antero-posterior view.

CONCLUSION.

In conclusion, I am fully aware of many omissions in this brief review of recent advances in orthopædic surgery. The last great advance is the formation of this section, of which the aim will be to act in cordial conjunction with all other sections; and, whilst it will undoubtedly acquire knowledge from them, it will itself endeavour to share its own advances with others.

THE Goulstonian Lectures ON THE INTERPRETATION OF SYMPTOMS IN DISEASE OF THE CENTRAL NERVOUS SYSTEM.

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LECTURE III.*

Delivered before the Royal College of Physicians of London on March 28th.

ANY discussion on the interpretation of symptoms in disease of the central nervous system cannot fail to take account of one of those important principles laid down by the late Dr. Hughlings Jackson, whom we all recognise as one of the master minds in neurology. I refer to his views on the subject of "negative" and "positive" symptoms. A negative symptom implies some definite loss of function, a positive symptom some exalted function. Jackson laid down the rule that a destructive lesion could not of itself cause positive symptoms; irritative lesions cause positive symptoms, and destructive lesions cause negative symptoms. This principle has an importance both theoretical and practical, and must be grasped if we wish to interpret correctly the production of symptoms in disease of the central nervous system. The actual symptom-complex produced by disease provides, more often than not, both positive and negative symptoms. Thus, in the case of an ordinary hemiplegia, due, say, to hæmorrhage into the region of the internal capsule or its near neighbourhood, we are dealing with

* Lectures I. and II. appeared in THE LANCET of April 22nd and 29th respectively.

a destructive lesion. The negative symptom produced by this lesion is a paralysis of voluntary movement, due in this particular example to loss of function in the pyramidal tracts. The other symptoms, the alterations in the reflexes, the spasticity, and the so-called automatic or associated movements which may be found, are positive symptoms, and, strictly speaking, are not caused by the destructive lesion itself. They are to be regarded as examples of "release of function," as Head[1] has termed it. In other words, the loss of function in the pyramidal tracts or cortico-spinal system has upset the balance between the many systems of fibres which converge to act on the lower motor neurone, and has allowed other mechanisms to come into play without the controlling effect of the system whose function has been destroyed.

IRRITATIVE AND DESTRUCTIVE LESIONS.

The term irritative as applied to a pathological lesion must not be interpreted too narrowly, in the sense, that is, of a mere mechanical irritant, such as a foreign body, a fragment of bone, or a tumour. Brief or temporary circulatory disturbances may be included in such a category, and the convulsions or delirium occurring in various states of toxæmia are to be regarded as positive symptoms produced through the medium of the circulation. It must be understood, therefore, that when a destructive lesion has occurred in any part of the nervous system, it does not follow that the disorder of function which has ensued is necessarily due to the destructive lesion itself in that particular part of the central nervous system; the symptoms may be caused in part or in whole by the unbalanced action of other parts of the nervous system.

The same morbid process may produce at one and the same time both negative and positive symptoms, and many toxic agents which at first act as an irritant or stimulant may, in larger amounts or in greater concentration, play the part of a destructive lesion. Thus, the early stages of syphilis of the central nervous system may be marked by pains, a positive symptom, generally due to inflammatory involvement of the leptomeninges; later, negative symptoms in the shape of palsies may make their appearance. A more difficult question to decide is, Can pain and other subjective sensory disturbances occur as the result of purely destructive lesions? For this would seem to imply that a positive symptom could be caused by a purely destructive lesion. At first sight there are cases which seem to support this hypothesis. The spontaneous pains which may be found in purely stationary lesions of the optic thalamus, as well as the abnormal and exaggerated response to nocuous stimuli in such cases, provide an illustration. We must remember however, in this connexion that we are dealing with a condition where the sensory functions of the cortex cerebri are interfered with, their afferent sensory fibres being interrupted in the optic thalamus. Further, the exaggerated response to painful stimuli is not a normal one, for the threshold of stimulation is raised, and in addition there is usually a longer latent period before the stimulus is appreciated. The case of spontaneous pains arising in concussion injuries of the spinal cord, which I have discussed in a previous lecture, cannot be included amongst purely destructive lesions. They are not stationary, and it is probable that œdema and even small hæmorrhages may be responsible for the symptoms, such changes acting as irritative lesions. Nor can the abnormal subjective sensations, so often found in the early stages of disseminated sclerosis, for example, be cited as objections to this main principle. For here we are concerned with a lesion which to begin with, at any rate, is a chronic inflammation. It is, of course, possible to over-emphasise this principle, but it is a principle vital to clear thinking, and in investigating our cases it is an advantage to be obliged to think exactly how the symptoms are being produced. I do not wish to imply that in investigating any case of disease of the central nervous system it is always necessary to set out first by classifying all the symptoms as negative or positive. But when we realise that there are these two kinds of symptoms we are at once led to appreciate the importance of regarding the central nervous system as a whole, not merely as a collection of different mechanisms, where the disturbances occurring in one can be considered without reference to what has been the effects of these disturbances on the others.

THE LOCALISATION OF LESIONS IN THE CENTRAL NERVOUS SYSTEM.

Consideration of these principles find their value when we are confronted with the task, often one of the greatest difficulty, of the localisation of a lesion in the central nervous system. It is notorious how misleading the signs may sometimes be. Some years ago, Collier[2] emphasised these difficulties in a valuable paper dealing with the false localising signs of intracranial tumour. More particularly in cases where a great increase in the intracranial tension has taken place is especial care needed in interpreting the localising value of the signs which we find. The rise in intracranial pressure, coupled with the disturbances in the cerebral circulation which may ensue, often combine to produce quite misleading appearances. It is well known, for example, that in certain cases of extra-cerebellar tumour or tumours of the cerebello-pontine angle the lesion has actually been placed on the wrong side, the probable explanation being that, by the rise in pressure below the tentorium cerebelli, the opposite side of the pons and medulla with its attached nerves has been compressed against the bony wall of the posterior cranial fossa.

The not infrequent palsy of the sixth cranial nerve occurring as a late event in many cases of intracranial tumour affords another illustration of a late sign having little or no localising value. In some cases of epileptiform convulsions the apparently focal character of the attacks not very uncommonly leads to misunderstanding, and it must be remembered that ordinary idiopathic epilepsy not very infrequently manifests itself by attacks of this kind. On the other hand, many cases of organic intracranial disease may first appear under the guise of apparently ordinary epileptic fits. The following case illustrates the occurrence of strictly focal convulsions in a general disease of the brain.

A middle-aged Jew was brought to hospital in an unconscious condition with violent clonic movements of the right arm. The only history obtainable was that he had had a fit a few hours before, since when he had remained unconscious with persistent and violent clonic movements of the right arm. Further examination was negative, except that both pupils were small and did not react to light and both plantar responses were extensor in type. The movements of the right arm continued and could only be controlled by keeping the patient under the influence of chloroform. Although it was suspected that the case might be one of G.P.I., the strictly focal character of the convulsions and their persistence led me to advise trephining over the motor centre for the right arm. No local lesion was found and no benefit accrued from the operation, the convulsions returning as soon as the effect of the anæsthetic had passed away. Death occurred about 36 hours later. Macroscopic and microscopic examination of the brain showed the typical changes of G.P.I., but no sufficient reason could be discovered why the convulsions should have been so strictly local in character.

In the two preceding lectures I have been concerned principally with symptoms arising from disease of the central nervous system itself. Many of the nervous symptoms of which patients complain are, however, to be interpreted not as arising from diseases of the substance of the central nervous system itself, but as disorders of function produced by temporary or recurring disturbances in the circulation. Such disturbances may be quantitative, with the production of a state of relative anæmia or hyperæmia, or qualitative, consisting in some chemical or biochemical alteration in the blood itself, be this of the nature of a circulating toxin or the more simple chemical changes such as the lack of oxygen or the excess of carbon dioxide. Symptoms referable to the nervous system form a not inconsiderable part of nearly all forms of cardio-vascular disease, but apart altogether from cases of frank disease of this kind there are many other

conditions in which disorders of the cerebral circulation play a leading part.

Epilepsy and Epileptiform Convulsions.

One of my predecessors in this office, Russell,[3] in his very valuable Goulstonian lectures for 1909 has dealt very fully with this subject of disorders of the cerebral circulation, and I make no apology for returning to the same subject here, especially in regard to the question of epilepsy and epileptiform convulsions in general. For fits are a symptom which will always bring a patient to the doctor and are, moreover, one whose interpretation calls for our closest attention. We know how epileptiform convulsions, quite indistinguishable from those of ordinary epilepsy, may occur in a large number of different conditions. Such conditions are numerous organic diseases of the brain or its meninges, as injuries, tumour or abscess, meningitis, syphilis, encephalitis, G.P.I. Similar convulsions are found in many toxic states, as uræmia, eclampsia, lead poisoning; and lastly, typical epileptiform convulsions may be seen in cases of heart-block, constituting the Stokes-Adams syndrome. This is by no means a complete list, but it is enough to show the varying number of pathological states which may first declare themselves by the appearance of the same symptom—and, moreover, the symptom may not only be the typical grand mal attack, but may equally well consist of attacks of brief loss of consciousness, in other words, petit mal. There must, therefore, be some common ground between these different conditions where we can fix the immediate or proximate cause of the convulsions. Such cause lies, to my mind, in some disorder of the cerebral circulation, and in this opinion I am in absolute agreement with Russell as well as others. A comparison of the fits of ordinary epilepsy and of the fits occurring in Stokes-Adams disease, for example, as well as the very wide borderland which separates epilepsy proper on the one hand from many other conditions such as "cardiac faints," vasovagal attacks, and so on, on the other hand, are alone strong arguments in support of this contention. It becomes, therefore, a principle of some importance to regard the fit as a symptom only, and not as a disease.

The occurrence of epileptiform fits as an early manifestation of cerebral tumour is well recognised. Sargent,[4] in his recent Presidential Address to the Section of Neurology of the Royal Society of Medicine, relates that in a series of 270 cases of brain tumour operated on by him, in no fewer than 40 per cent. was a fit the first symptom complained of. This is probably an unusually high proportion, for there are, of course, many cases of cerebral tumour in which fits never occur at all; the mere presence of a cerebral tumour is not of itself sufficient to cause a fit. Similarly with injuries. Sargent states that the incidence of epilepsy among pensioners with old gunshot wounds of the head does not reach 5 per cent. Indeed, one may even hazard the assumption that there are probably a good many people about with foreign bodies still embedded in their brains, or at any rate within their skulls, who do not suffer from epilepsy. Moreover, when epilepsy does follow an injury to the skull, it is worth noting that the type of epilepsy occurring is more frequently that of idiopathic epilepsy—i.e., with unconsciousness—a tonic stage followed by clonic movements and is not so often Jacksonian in type. I have, unfortunately, no figures to support this opinion, but from the large number of cases of traumatic epilepsy which I have seen I am quite convinced of its truth. It is abundantly clear, therefore, that the mere presence of a tumour or a scar is not in itself sufficient to produce epileptic fits. The following case is particularly interesting in regard to the explanation of the occurrence of fits in cases of brain tumours:—

A young soldier was discharged from the army in December, 1918, on account of epileptic fits, the first of which had occurred in November, 1918. Early in 1919 he was admitted to hospital, the diagnosis of epilepsy being confirmed by actual observation of the attacks. He was discharged but continued to attend as an out-patient. By July, 1919, the character of the fits had definitely altered and had become typically Jacksonian, the actual attacks always beginning in the right hand. He gradually developed signs of a lesion in the left cerebral hemisphere, a slight right hemiplegia, a slight aphasia, and optic neuritis. In December, 1919, operation was performed and a large subcortical tumour was found; a piece removed for microscopic examination showed the structure of a glioma. A large decompression opening in the skull and dura mater was left. Not only did his headache disappear and the optic neuritis subside rapidly, but the fits ceased entirely. Moreover, although the hemiplegia and aphasia have considerably increased in extent and severity, showing that the tumour must be still active and growing, no further fits have occurred. The only possible explanation is that the relief of the increased tension afforded by the operation has removed some condition which was producing the fits, and in the circumstances it is difficult to see what these conditions could have been except some disturbance of the circulation.

Epilepsy and Hysteria.

Text-book descriptions of the fits of epilepsy and hysteria generally lead the reader to suppose that there is a very definite distinction between them; tables of differential diagnosis are indeed very often provided. But in practice such a distinction is often only too narrow, and increasing experience has taught me the great difficulty in making a diagnosis in some of the periodic attacks of apparent loss of consciousness which we may be called upon to treat. Not only may hysterical symptoms precede or follow what appears to be a typical epileptic attack, but in the same patient attacks of different nature may alternate or occur in irregular sequence. It is, of course, well recognised that many epileptic attacks may be precipitated by various psychical conditions or by emotions. Recently an attempt has been made definitely to include epilepsy among the group of diseases, or rather of symptoms, which may be said to have a psychogenic origin. Pierce Clark[5] in particular has strongly urged this view, and has elaborated an explanation of the mechanism by which the attacks are produced. The following quotation from one of his publications on the subject will briefly indicate his views:—

"We therefore must conclude that essential epilepsy as regards causation is dependent upon a primary congenital defect or inheritable defective instincts of natural and healthful adaptations to reality, the epileptic make-up or constitution, and that at successive periods in life, when emotional and physical stresses of an intensive character are encountered, the individual so constituted has epileptic reactions such as fits, disturbances of temper, lethargies, and various psychic phenomena. The fit is essentially a regressive phenomenon, a flight from undue stress into unconsciousness, the deeper manifestations of which, the convulsive phenomena, are superadded."

This explanation may at first sight appear fantastic. And it is worth noting that no attempt is made to explain in terms of physiology how exactly the state of unconsciousness is produced. Nor would we all be disposed to agree with his generalisations on the subject of the epileptic make-up or constitution. Still there are certainly cases where attacks apparently similar to what we call idiopathic epilepsy have yielded to purely psychological treatment. At the least his work carries a valuable lesson in emphasising the importance of the emotions and of psychical states in general in the ætiology of the epileptic fit and in illustrating the great value of continued training and treatment in these persons.

On the other hand, another school would include epilepsy among the group of so-called "toxic idiopathies," thus bringing it into line with conditions such as asthma, hay fever, urticaria, &c. Again, cases may be found which appear to confirm such an interpretation. Whatever may be the exact mechanism of production, the final physical basis or proximate cause must, to my mind, lie in a disturbance of the cerebral circulation.

Bodily Changes Induced by Psychical States.

A consideration of other conditions in which various psychical states or emotions may induce definite bodily changes can afford us valuable help here as well as in many other of the symptoms of so-called functional nervous disease. Cannon's[6] long series of experimental researches on the bodily changes in pain, hunger, fear, and rage have confirmed in many respects the clinical

experience of previous generations, and his work and our own more recently enlarged knowledge of the involuntary nervous system and the functions of certain of the endocrine glands have combined to throw light on the relations between psychical disturbance on the one hand and the bodily functions on the other hand. The effect of emotional shocks, long continued mental anxiety, or other forms of psychical stress are now generally acknowledged to be of the greatest importance as causal factors in conditions such as Graves's disease, diabetes, and diabetes insipidus. In his recent work on the sympathetic nervous system in disease, Langdon Brown [7] has discussed the relations between the various disturbances of the bodily functions arising from disorders of the involuntary nervous system and their relations to the functions of the endocrine glands. It is only of comparatively recent years that the involuntary nervous system has received much attention at the hands of clinicians, and we are only now beginning to realise the large part which it may play in the production of symptoms. Wider experience induces a wider outlook, and we should be wise to recognise the multiple causes which may be at work in the production of any given group of symptoms which we are pleased to term functional. On the one hand, we may like to trace the origin back to some psychical trauma or repressed complex, while on the other we may search for, and perhaps find, some focus of infection or some general dietetic or hygienic fault. It is as important to discover the one as it is fatal to neglect the other variety of cause.

We are perhaps too much occupied sometimes in attempting to correlate disturbance in function with actual structural disease. Even in cases where gross structural disease of the central nervous system is present, post-mortem examination and even microscopical study will not always succeed in connecting symptoms with actual morbid anatomy. The barren results of the study of the morbid anatomy of idiopathic epilepsy, for example, will serve to illustrate this point. In an interesting paper Holmes [8] in 1906 drew attention to the difficulty in correlating loss of function and structural change in focal lesions of the central nervous system, especially in regard to secondary degenerations. And if this can be the case in such gross conditions of disease as cerebral tumours or disseminated sclerosis, for example, we should be all the more chary in lightly dismissing the significance of functional symptoms. The influence of fatigue on the central nervous system, the effect of anoxæmia, as experienced by workers in very high altitudes, are again common examples of conditions where disturbances of function in the central nervous system are easily produced by temporary biochemical causes.

"ORGANIC" AND "FUNCTIONAL" NERVOUS DISEASE.

In conclusion, I wish to offer some remarks on the use and abuse of the terms "organic" and "functional" as commonly employed in connexion with disease of the nervous system. I have throughout these lectures endeavoured to emphasise the fact that in investigating cases of disease of the central nervous system, it is in reality disturbances of function which we are studying rather than any alterations in structure produced by disease. Hence the continued use of the terms organic and functional becomes positively misleading. And in the past the attitude of mind inevitably engendered by strict adherence to these terms—implying as they do a primary duty to distinguish absolutely between symptoms caused by gross physical changes and symptoms due to temporary biochemical disturbance or even to more subtle changes evoked by mental or psychical causes—has tended to retard progress. For it has led to the more intensive study of those symptoms such as permanent changes in the reflexes, the extensor plantar response, &c., with which I have already dealt, at the expense of many other quite as important symptoms which were often called functional because none of the so-called strictly organic signs were present. The term functional, therefore, although a good one at first, has gradually become identified with the meaning of hysterical, using that word in the broadest sense. When we look more closely into the results produced by this abuse of terms we find that, broadly speaking, it was diseases in which permanent changes in the reflexes occurred which were called organic, and that unless these could be demonstrated the case ran a grave risk of being labelled functional. Functional, no doubt, many were and are, but owing to the special connotation which this word came to possess it is a misleading term. For example, for many years chorea and paralysis agitans were included among the so-called functional disorders; yet very few would now apply this term to them. This distinction between organic and functional, though at first useful, has ceased to serve its purpose. What we want to do is to distinguish between symptoms caused by physical influences and symptoms caused by mental influences only. Physical changes may be permanent, such as gross destruction of nerve fibres or tracts, tumours, &c., or they may be temporary, produced by circulatory defects, for example, or by alterations in the volume or composition of the blood, and so on. Similarly with mental or psychic factors. These mental factors may induce bodily reactions which persist and lead to permanent changes in bodily functions. Yet we do not call diseases like diabetes functional. It is quite logical and useful to call those symptoms functional as a basis for which we are unable to find any definite structural disease, but it is illogical and misleading to identify the term functional with the term hysterical. If we really consider any particular symptom to be hysterical, that is mental, in origin, we should say so. The term functional can really be dispensed with altogether, for all diseases of the central nervous system are functional in the sense that a disorder of function is produced. What we really want to know is whether the disorder is due to permanent structural change in the tissues or not. If not, is it due to physical or mental causes or to both?

The attempt to draw a hard-and-fast line between what is commonly known as organic and what is known as functional nervous disease is fraught with no little danger both to the patient and to the profession at large. Equally mischievous is the idea that there must be two classes of neurologists, one to deal with organic and one with functional cases. It is to be hoped that no such arbitrary distinctions will be recognised, particularly when we bear in mind the unfortunate divorce between nervous and mental diseases which has obtained in this country. The nervous system functions as a whole and should be studied as a whole. Anyone who has tried, for example, to correlate the disturbances of speech which he investigates at the bedside with the diagrams of the various so-called speech centres which he finds in the text-books, will have realised how inadequate is such a limited conception of the function of the higher parts of the central nervous system. It is no use trying to simplify where simplicity does not exist.

I fear that I have only been able to give a superficial sketch of some of the more important views on certain aspects of neurology which the work of later years has produced. It is by a realisation of these important general principles, as well as by a closer scrutiny of symptoms, both objective and subjective, that clinical study must progress.

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CARDIAC PAIN.

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WHEN choosing a title I hesitated; my first inclination was to call this paper "Angina Pectoris," because most of the cases to which I shall refer belong to that group; but I realised that such a course would rather accentuate the tendency to look upon angina as something specifically different from other forms of cardiac pain, and one of the objects of this communication is to emphasise the view that all forms of cardiac pain are in essence of the same nature though varying in degree.

When the words angina pectoris are mentioned two pathological conditions at once assert themselves in the mind—coronary sclerosis, and disease about the root of the aorta.[1] These conditions are not infrequently found to be present in fatal cases of angina; the presumption has followed that the pain was directly due to them, and that the onset of angina justifies the inference that one or other is present.

Such an attitude of mind becomes more assured when so renowned an authority as Sir Clifford Allbutt enunciates the view that angina pectoris is caused by (1) disease of the investment of the aorta or pericardium, which in its turn may be caused by acute rheumatism, pericarditis, acute syphilis, or as in the "elementary angina pectoris" found in patients with senile hearts, due to stretching of the adventitia; or (2) to coronary atheroma. It seems to me desirable that the meaning of cardiac pain should be viewed from a different standpoint.

Cardiac Pain an Indication of Functional Disability.

Cardiac pain is not evidence of any particular variety of pathological condition. It is rather an indication of functional disability, and any view which focuses attention too closely on the pathological aspect will tend to interfere with a satisfactory understanding of the difficulties in any particular patient. It is well to remember that fatal angina pectoris may occur, and yet the heart, on careful examination, may show no evidence of either coronary disease or pathological changes in the aorta, valves, or myocardium. This was fully recognised by Heberden, Lathom, and others who sought for an explanation which would apply independently of organic lesions. Heberden's view was that the heart passed into a state of "spasm." It is hard to conceive clearly what is meant by such a term when applied to the heart, but it is interesting in that Heberden searched for an explanation among variations in the function of the heart muscle; he recognised that morbid anatomy afforded no adequate answer to this question.

Classification of Cardiac Pain.

Such classifications of anginal pain as have been made are based more on the pathology and ætiology of the cases than on the clinical aspect, and this is probably the only rational plan. We are familiar with Sir William Osler's three main groups—syphilitic, arterio-sclerotic, and neurotic—and those already referred to by Sir Clifford Allbutt. The neurotic group can be subdivided into the toxic, vaso-motor, neurasthenic, and hysterical, and the arterio-sclerotic might also be subdivided. It cannot be too clearly stated that there is no sharp dividing line between these groups. All degrees of cardiac pain, from the most severe example of Heberden's angina pectoris gravior to a mere ache over the cardiac thrust, are met with. Again, the degree of pain is no sure indication of the extent of the actual disease of the cardio-vascular system. Pain and distress in patients belonging to the toxic, vaso-motor, and neurasthenic groups may be agonising, while that in patients with definite arterio-sclerosis or coronary disease may be slight and transient.

A clear conception of the meaning of such a symptom as pain is essential to enable an accurate analysis in any case. If one accepts the view that cardiac pain is the result of stimuli passing up to the central nervous system from the heart, the degree of pain experienced by the patient will clearly depend upon the resultant of two factors—the intensity and number of the stimuli, and the sensitiveness of the nervous system. It is obviously important to determine whether a pain about the thorax or epigastrium is cardiac in origin or not. This is not always easy; in this connexion it is remarkably suggestive how large a number of patients suffering from cardiac pain are treated for indigestion or neuritis.

FIG. 1.

Approximate segmental distribution of lower cervical and upper dorsal roots. Dotted areas represent the common sites of cardiac pain.

Cardiac pain has been divided into two types—sub-mammary and supra-mammary; supra-mammary associated with the sense of constriction and pains radiating into the arms, and sub-mammary accompanied with pain which shoots through to the back or round by the axilla to the left scapula. This is a division or classification which does not hold with any degree of certainty, though it may be said that the supra-mammary is a more ominous type than the sub-mammary.

I need hardly recall the fact that visceral distress reaches the consciousness indirectly, the related segments are excited and pain is felt in the areas of the correlated cerebro-spinal nerves. In the comprehension of cardiac pain this segmental distribution must be borne in mind. Fig. 1 shows approximately the segmental distribution of the lower cervical and upper dorsal roots. They are defined on the right side of the figure; on the left, the dotted areas represent the common sites of cardiac pain. The distribution and manner of the spread of this pain is an excellent example of the referred pain so clearly described by Sir James Mackenzie and Dr. Head. The first segments affected are the third, fourth, and fifth dorsal, but the first and second dorsal are also soon involved, and account for the pain found in the inner side of the arm. When the lower cervical segments are reached the pain spreads into the fingers. The pain felt in the centre of the back and in the inter-scapular areas is a further manifestation of the involvement of the fifth and sixth dorsal segments. It is well to remember that, although anginal pain is more usually left-sided, it is not uncommon to find it most marked to the right of the middle line and extending down the right arm.

The frank, fully developed attack of angina pectoris, the combination of anguish and the sense of imminent dissolution, cannot be mistaken. Then the diagnosis presents no difficulties, but it is not so with atypical forms, especially in patients in whom the symptoms are slight; in these patients the earliest

[1] So much so, that I think there can be no doubt that to many angina pectoris is looked upon as evidence of the existence of one or other or both of these grave lesions.

manifestations, the initial warnings, are frequently misunderstood.

Misleading Epigastric Symptoms.

It is remarkable, as I have already noted, how often a diagnosis of indigestion is made, in part because the patient complains of stomach trouble, and also because the initial pain is epigastric or xiphisternal in site. The fact that the pain occurs more readily after food and is frequently terminated by the eructation of wind lends support to the diagnosis. The occurrence of pain in the epigastrium as the earliest manifestation of cardiac distress must not be forgotten. Too often the significance of this symptom is overlooked, and the patient is treated for flatulent dyspepsia. This point is well brought out in some of the cases to be briefly described later. If the effort which has caused the pain be persisted in, the pain usually spreads upward and may alter in character; but that the initial epigastric pain is cardiac I am convinced, from careful investigation in a number of instances.

I might emphasise here the tendency to aerophagy or air-swallowing induced in patients subject to anginal pain. The patient is quite unaware that with every effort he makes to "bring up the wind" which he imagines to be distending his stomach he inadvertently swallows air which passes down the œsophagus and can be heard fizzing through the cardiac orifice if the bell of the stethoscope be placed over the stomach. Having swallowed a sufficiency he eructates it, often noisily, and with considerable satisfaction and temporary relief. It is obviously futile to treat flatulence of this nature with gastric antiseptics or a restricted diet. Such treatment will fail except in so far as it acts by suggestion.

Another error in diagnosis is that of rheumatism of the arm or possible "neuritis." This more often occurs when the pain in the arms is the dominant symptom and the præcordial distress slight, and is a more common manifestation in the toxic and neurotic type of pain.

I propose to describe briefly a number of patients suffering from cardiac pain with the object of demonstrating some of the various manifestations.

CASE 1.—Male, aged 58. Blood pressure 170 mm. Hg. Typical example of angina pectoris of a grave type. Complained of agonising pain across the chest, through to the back, and down the left arm.

Past History.—Well-preserved man. No history of rheumatism or gout, and with the exception of syphilis at the age of 20 has never had any serious illness. Always led an active life.

I saw him first in December, 1919. Present symptoms began six months before and gradually became more noticeable; agonising pain across chest at level of nipples, a sensation as of something trying to burst in chest, accompanied by sensation of impending dissolution. Pain spreads down left arm. Also pain in left shoulder; forearm feels as if clamped in a vice; arm useless. Some "rheumatic pains" in right upper-arm during an attack; left arm painful in bed, independently of sternal pain, though severe sternal pain is invariably followed by pain in arm. Pain across back extending above level of fourth to seventh dorsal spine. No palpitation, no dyspnœa. Patient brought to a dead standstill by the pain; feels as if the life were taken out of him. Heart was normal in size; heart-rate 92, regular.

I saw him again in February, 1920. He had rested for two months, and during this period of rest had been free from all symptoms, but was again worried by one or two attacks of slightly different nature on attempting to resume a normal mode of life. He died suddenly in the spring of 1921.

CASE 2.—Male, aged 53. Blood pressure 210 mm. Hg. No syphilis. No rheumatism. The chief interest in this case is the unusual situation of the pain and the occurrence of vomiting and diarrhœa if the effort inducing the pain was persisted in. Careful and repeated examination never revealed any evidence of organic disease in the gastro-intestinal tract. The anginal attacks ceased when the heart muscle began to fail. First seen June 18th, 1919. First attack, 1917. "Severe pain in pit of stomach." Extremities went cold and he was covered with sweat. Second attack six months later, due to hurrying when carrying a parcel. On this occasion the condition was diagnosed as "catarrh of the stomach." He had, up to June, 1919, five or six attacks in all, due to excitement or physical effort. When I saw him he complained of shortness of breath and palpitation on effort, and described the attacks of præcordial pain as dull, heavy, and gripping, with a sense of tightness or binding. This was felt at the level of the nipples, more to the left than the right of the mid-line. If he persisted in his effort the pain spread downwards to the abdomen just above the umbilicus, doubled him up, and sometimes the attack ended in vomiting and diarrhœa. Heart enlarged. No evidence of V.D.H. Arteries thickened. Blood pressure 210 mm. Hg; occasional slight albuminuria. After two

FIG. 2.

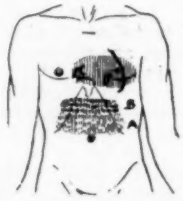
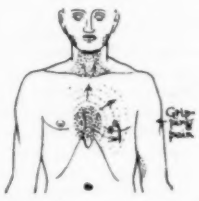


FIG. 3.



CASE 2 (Fig. 2).—Shaded areas of pain. A = Area of discomfort at commencement of an attack. B = Area to which discomfort extended when effort was continued.

CASE 3 (Fig. 3).—Dotted areas of pain.

weeks' treatment he felt much better and was able to walk further, and the first indication of an attack was discomfort in the abdomen just above the umbilicus (shaded area A in Fig. 2). If the effort was persisted in the discomfort and sense of pressure become more severe and extend upwards to the epigastrium (shaded area B). Further continuance of effort was followed by vomiting. Relief was almost instantaneous if he ceased to walk and refrained from the effort which had induced the pain. An electro-cardiogram shows a bundle lesion.

In June, 1920, he failed, dyspnœa became distressing, and general anasarca with ascites developed. Great benefit was derived from Bailey's pill and a mixture of rhubarb and soda, so much so that he was able to return to work until June, 1921, when the dyspnœa became even more severe and Cheyne-Stokes respiration appeared. There was no further anginal pain and he died of cardiac failure on August 4th. Post-mortem examination did not reveal the presence of any disease in the stomach or gall-bladder.

CASE 3.—Male, aged 60½. Angina of moderate degree for some years diagnosed as "indigestion."

First seen Nov. 25th, 1919. Complained of "pain in the stomach" brought on by walking, and so severe that he has to stand still. At times his "heart flutters or jumps."

Past History.—Never been ill except with influenza. Pain diagnosed as "indigestion," first noticed five years ago; pain worse when the weather is cold, and getting into a cold bed will induce it; it is "gripping" in character at the level of the nipples and affects the breathing. If he stops the pain goes, if he persists it spreads up into the jaws and throat, as marked in diagram. Arms and shoulders escape, except that there is at times a peculiar pain just inside the left elbow, *not* definitely associated with the præcordial pain (Fig. 3). Heart enlarged. Blood pressure 160 mm. Hg. Moderate degree of arterio-sclerosis. No V.D.H. Patient died suddenly Dec. 2nd, 1921.

CASE 4.—Male, aged 63. Atypical cardiac pain, right-sided, and also in epigastrium. Complains of pain in *right* arm just above hand, coming on as result of exertion and associated with dyspnœa, followed by pain in epigastrium.

Past History.—Has always worked hard. No serious illness. Last February and March erysipelas of face, and in October last jaundiced; pain first noticed then.

Blood pressure 170 mm. Hg. Heart enlarged a little. No bruits. Pain never very severe; always caused by exercise such as walking; first felt in the inner surface of *right* forearm just above wrist and extends to level of elbow; disappears as soon as he rests. If he continues to walk pain appears in epigastrium and persists until effort ceases. It is not of a constricting or gripping nature.

CASE 5.—Male, aged 64. Anginal pain with pain above each elbow. Syphilitic disease of aorta probably present.

First seen August 12th, 1919. Complains of attacks of pain over the heart for eight years; shortness of breath for last 18 months, and palpitation for the last six months.

Past History.—Spirits to excess up to age of 50; history suggest syphilis. No rheumatism. Pain first noticed eight years ago; thought to be due to "indigestion"; for the last 18 months it has been much more troublesome; occasionally suffers from attacks in the night if he has had a hard day.

Chest markedly emphysematous; heart sounds almost inaudible. Blood pressure 185 mm. Hg. Arteries thickened and tortuous. X ray examination in January and August, 1918, showed nothing abnormal, but in September, 1918, definite increase reported in aortic shadow. The pain is caused by exertion, such as walking, and is more easily induced after food, especially breakfast. The pain is "hard and burning," occasionally accompanying a sense of constriction. It is *first felt* from the level of second costal cartilage, the angle of Louis, down to the level of the nipples, and extends outward as far as the nipples; then it spreads below the level of the nipples in a wider band almost to the axillæ. If he persists in the effort pain is felt above each elbow on the inner side of arm. It is sometimes continuous.

CASE 6.—Male, aged 68. This case is a good example of the fact that subsequent attacks of angina are frequently less severe than the first.

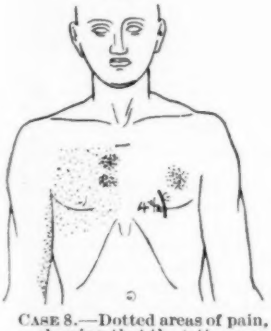
Well-preserved, rather highly strung man; complained of præcordial pain to the left of the mid-line brought on by exertion and accentuated by cold. Heart extended 4½ inches to the left of the mid-line. Radial arteries not sclerotic. No palpitation. Blood pressure 140 mm. Hg.

Past History.—Has always led an active life, full of responsibility, and has been free from rheumatism and syphilis.

First noticed præcordial pain in August, 1913, on attempting to climb hills in Devonshire. Other forms of exercise, such as swimming and diving, carried out with perfect comfort. On Oct. 6th, 1913, he was dressing and packing at 7.30 A.M., when he became conscious of a fluttering sensation in the front of the chest. This was followed by diffuse pain concentrated a little above the left nipple as if a small ball situated there was going to burst. The pain became unbearable. He was covered with sweat, the feet and hands were deadly cold, and he looked grey, anxious, and ghastly. The pain radiated down the inner side of the left arm and the fingers became numb and prickling. The agony lasted about 15 minutes, during which he felt death was inevitable, because life was incompatible with such pain. After the attack a dull pain persisted for hours in a band across the chest, most marked above the left nipple.

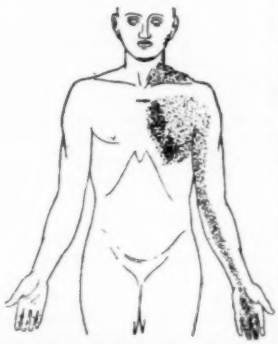
He has never had another such seizure, living as he does a carefully regulated life, well within his limitations;

FIG. 4.



CASE 8.—Dotted areas of pain, showing that the latter may be right-sided.

FIG. 6.



CASE 10.—Dotted areas of pain: typical distribution.

nevertheless, walking up a slight incline, especially if it is cold and he has just left a warm room, invariably gives rise to præcordial pain and a feeling that something will have to give way or burst if he takes a deep breath.

CASE 7.—Male, aged 56. An example of cardiac pain dating from an attack of influenza; this is not an uncommon history.

Consulted me on Feb. 24th, 1920, complaining of tightness in breathing, especially after walking, and "an indigestion pain in the back." Also dizziness and an increased liability to shortness of breath.

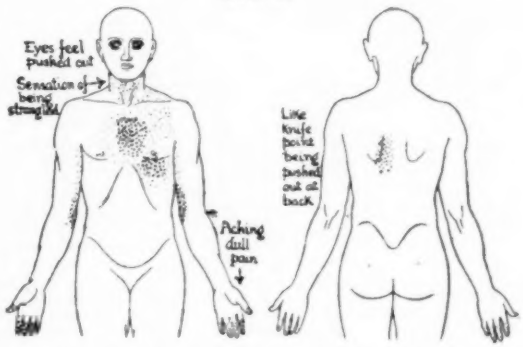
Past History.—No serious illness except syphilis over 30 years ago. Influenza last July. He has never been the same since; has not felt comfortable in his breathing. Two weeks ago, without any cause, dizziness became distressing and any exertion gave rise to the sensation of a "swollen lump under the left nipple as if the lump were too big for the chest." In addition, effort caused an aching pain along the vertebral border of the left scapula at the level of the five and six spines which he described as "indigestion pain." This spread into the left arm and down to the elbow, rarely as far as the wrist. It gradually disappears when he ceases to walk.

He looks older than his years. There is diffuse thickening of the vessels and extremely marked arcus senilis. Blood pressure 190 mm. Hg. No V.D.H.

CASE 8.—Male, aged 57. Notable in this case were the deviation of the pain to the *right* and the very limited response to effort. The prognosis was grave, though pain was never of the most severe type.

Consulted me June 4th, 1919. A rather unusual example of cardiac pain. Has always been healthy; no history of

FIG. 5.



CASE 9.—Dotted areas of discomfort and pain.

any serious illness or infection. On examination, heart slightly enlarged; blood pressure 120 mm. Hg; urine normal; marked emphysema. Complains of pain in back between shoulders, brought on by any effort, such as walking, especially on an incline or against wind. If he persists in effort pain becomes more intense in back, and extends round to front of chest by way of *right* axilla, and in front is most intense in second and third intercostal spaces just to right of mid-line. Sometimes extends down to *right* elbow. This may occur after persistent effort; once or twice it has been felt in inner side of left arm. To use his own words, "the pain absorbs my breathing"; he is compelled to stand still.

Pain first noticed 10 years ago, when he passed through a period of considerable mental worry. He was in bed for two weeks, and on his doctor's advice took life more easily, with very great benefit.

Later Note.—From June, 1919, he continued to have similar attacks, tending to become more severe. On Feb. 17th, 1920, he died in an attack.

CASE 9.—Female, aged 51. Grave type of anginal pain in a woman suffering from high blood pressure.

First seen April 10th, 1920; complained of three years' pain, substernal, on exertion; also pain like a knife pushed through to the left shoulder blade; aching of both elbows with heavy dull pain; all the fingers feeling heavy and aching. At the same time the eyes feel as if being pushed out of the head.

Past History.—Always healthy. No rheumatism or chorea. Life has been strenuous. Slight palpitation on exertion or excitement during the last seven years.

Heart enlarged 4¼ inches to the left and apex beat in the fifth and sixth spaces. Blood pressure 200 mm. Hg. No alternation of pulse. Urine 1018. No albumin. No sugar. First began to suffer from cardiac pain three years ago; walking induces pain, especially on a windy or cold day. Getting into a cold bed at once induces it. No Raynaud's symptoms between attacks, but cannot use left hand and arm. On April 5th, 1920, five weeks before I saw her, she had her worst attack. It lasted 10 to 15 minutes. Agony of pain as charted (Fig. 5). She thought she was dying and had the sensation she was being strangled.

On August 3rd, 1921, still much the same symptoms; but on the whole better with dieting and very quiet life.

CASE 10.—Female, aged 35. In this case the distribution of the pain is typical; a marked nervous element is present.

First seen on Sept. 27th, 1919. Complains of pain over heart for five years' duration; pain down left arm, and in neck, left jaw, and back for last 18 months, causing sleeplessness.

Past History.—Rheumatic fever at 11 years of age. severe influenza, 1918; since this illness she has been short of breath.

Slight enlargement of heart, but no evidence of any valvular disease. Blood pressure 150 mm. Hg. Urine normal; spleen just palpable—cause of this enlargement not obvious. No pyrexia; blood normal. Pain continuous, and situated over apex beat and left side of sternum as far up as second costal cartilage. When severe it extends

over shoulder down inner side of upper arm, then down the front of forearm to ring and middle fingers. Also felt along vertebral border of scapula in neck behind sterno-mastoid, and in angle of left jaw in front of ear. (Fig. 6). No sense of constriction. Pain is like toothache. Bromides afforded definite relief.

CASE 11.—Female, aged 53. Angina pectoris, the initial symptoms being felt in the area supplied by the fifth nerve.

In May, 1920, the patient complained of severe heart pain, preceded by peculiar sensations in jaws, face, and neck. Has had arthritic rheumatism in 1918. First attack of angina pectoris in April, 1919. She has been much more careful ever since and relatively free from pain, but in September, 1919, after climbing some stairs she suffered from another agonising attack. Blood pressure raised, 190 mm. Hg; heart somewhat enlarged, but free from valvular disease. First evidence of cardiac distress is a peculiar sensation in the cheeks—they feel tight and engorged; this sensation extends from under eyes down to jaws and is most marked in cheeks and around mouth. The cheeks flush and feel as if they were going to burst. Then jaws and lower neck are affected with a choking sensation (Fig. 7). These sensations are induced by effort and cease with the cessation of the exertion. Walking will induce them, especially if the wind is cold. If the physical strain is persisted in, the above sensations are followed and accompanied by the typical feeling of tightness across the chest and finally fully developed angina pectoris gravior — agonising pain, fixed chest, laboured breathing, and grey pallor and cold sweat.

FIG. 7.

CASE 11.—Dotted areas of pain, which appeared in the order indicated by the numbers.

August, 1921: No further symptoms. Has lived very carefully.

Prognosis.

If we have clearly in our minds that cardiac pain is an evidence of cardiac exhaustion, whatever the pathological lesion, it will help us in arriving at a correct valuation of the expectation of life. Other indications of myocardial fatigue should be sought for; such an indication is breathlessness—the heart fails to supply the central nervous system with an adequate supply of blood, and the result is dyspnœa. It must have struck all of us how patients vary in the degree of these two symptoms; sometimes the dyspnœa is dominant, sometimes pain—sometimes both are in evidence. Cardiac pain is comparable to other referred pains, and is evidence of stress and an inability on the part of the heart to meet the demands made on it. Of a similar nature is the *sense of constriction*, which is occasionally the sole manifestation of distress. One other symptom of cardiac distress occasionally exists as the only evidence, or at any rate as the dominant symptom, indicating cardiac exhaustion, and that is a feeling of complete lassitude—more particularly noticed in the legs, which feel as if made of lead. It becomes a great effort to walk and move about. A friend, a medical man, who is liable to attacks of fibrillation of the auricle, tells me that the first indication he has of an attack is this sensation of overpowering weariness in the limbs, more especially in his legs. As soon as he is conscious of this change he feels his pulse and finds that his heart is acting in the characteristic, rapid, and disorderly manner of auricular fibrillation.

I fear I can offer no explanation of that remarkable symptom which bulks so large in some of the severer forms of anginal pain—namely, the fear of impending death, or the belief of the sufferer that he is indeed "in articulo mortis." It is something entirely distinct from pain, from the sense of constriction, and from the dyspnœa. No theory based upon the relationship of the sympathetic to the cerebro-spinal system appears to meet the difficulty.

It may be of the same nature as the familiar and indescribable sensations experienced when a kidney or testicle is steadily and firmly squeezed.

Having attempted to form an opinion as to the degree of cardiac exhaustion and the extent to which it can be improved by rest, the next step is to consider the condition of the nervous system. It is worth remembering that nervous exhaustion "lowers the threshold to pain." Anxiety, worry, debilitating diseases all induce this condition. The future becomes more favourable when there are clear indications of an exhausted and over-sensitive nervous system, because in this we have a state of affairs which can be ameliorated; mental and physical rest, an adequate amount of sleep, the removal of anxieties, freedom from business worries, a quiet holiday in the country, and the free administration of bromides restore the nervous system to its normal equilibrium, and there is a corresponding diminution in the liability to cardiac pain. This applies to both sexes, but it is particularly applicable to women. And it is noteworthy that cardiac pain in a woman under 50, even when anginal in nature, is rarely ominous, but since women also suffer from arterio-sclerosis, chronic Bright's disease, valvular disease, aortic mischief, and myocardial degeneration, though less frequently than men, they too sometimes present the typical manifestations of severe and possibly fatal angina pectoris. I have notes of at least four cases of fatal angina in women.

In women the pain is often stabbing or a continuous ache, and is increased by slight effort or any sudden emotional disturbance. Palpitation is a common accompaniment of the pain, together with a feeling of faintness and exhaustion and a tendency to syncope. The sensation of constriction of the chest as if it were crushed in a vice and the feeling of extreme sternal pressure, so characteristic of the graver type of angina, are rarely met with. The pain in the arm and shoulder is common, but is less clearly limited to the inner side of the limb; more often the whole area is involved, and the pain described by the patient as that of neuritis or rheumatism. It is characteristic in women to find a much greater degree of hyperalgesia of the skin and a wider distribution of the pain. At the climacteric there is increased liability to cardiac pain, especially if there is coincident high blood pressure.

Again, it is satisfactory when one finds considerable variation in the degree of effort necessary to bring on cardiac pain, the inference being that there is not permanent irremediable disease of the myocardium and coronaries, but if pain is more and more easily induced in spite of rest and care, and if the attacks become more frequent and severe, it is clear that the myocardium is steadily growing less efficient and that death may occur at any time. In the toxic, neurotic, and hysterical cases a favourable prognosis may be given with confidence.

I would like to suggest the importance in each case of arriving at a clear decision as to the significance of the symptoms, and I believe it is our duty to be frank with the patient and to point out, when possible, the factors responsible for the distress. In the graver forms of angina the patient must learn to be honest with himself. If necessary his life must be reorganised at a lower level of effort, both physical and mental. He must lead a more leisurely existence, recognising that the pain is evidence of serious exhaustion of the heart muscle and is a signal and a warning which he will neglect at his peril.

Sir Charlton Briscoe has recently suggested[1] that the typical referred pains of angina pectoris are not due to primary cardiac distress, but rather that the composite area of referred pain corresponding with that of angina pectoris is the outcome of over-fatigue of certain muscles such as the scalenes, the intercostals and triangularis sterni, and other accessory muscles of respiration. That certain of these muscles become tender in patients suffering from cardiac pain is not new, and we know also that the muscles of certain areas of the abdominal wall become tender after hepatic and renal colic. Is it not more probable that the tenderness of these accessory muscles of respiration is rather the result of cardiac stress, reaching them through their common meeting ground in the spinal cord, than that the pain of angina pectoris is the result of the extra strain put on these same muscles during effort?

[1] THE LANCET, 1921, ii., 1257.

SOME CUTANEOUS EFFECTS OF DENTAL SEPSIS.

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THE doctrine of focal sepsis as a cause of certain well-recognised manifestations in the skin has recently received a very considerable impetus from the writings and reports of Drs. H. W. Barber[1] and H. Leslie Roberts.[2] Informal discussions and much healthy criticism have followed, and while it still appears too early to accept as proven any suggestion put forward regarding the ætiology of certain particular skin diseases in their series, it is at any rate realised that substantial progress has been made, and the road opened for further investigation, both from the clinical and bacteriological standpoints. The five cases of the series on which this report is based are purposely chosen for the apparent simplicity of their cutaneous reactions, their immediate response—irrespective of vaccine therapy—to treatment of the cause (which in every one of them was dental sepsis), and the presence bacteriologically, in every case and in immense preponderance, of *Streptococcus viridans* or *Streptococcus hæmolyticus*.

Transmutable Nature of Streptococci.

In this connexion (Rosenow[3]) it is significant to note that modern research has established the principle that "the various types of streptococci (viridans, hæmolysans, and the pneumococci) are not constant in their properties, but are transmutable the one into the other." At first sight this revolutionary discovery would seem to complicate the problem still further. To me, however, it seems to simplify it from the bacteriological aspect, and should engender more intensive study of the environment in the tissues, where the biochemical factors are at work. Speaking as a mere clinician, I have always considered that classification of bacteria by their reactions in milk, sugar, and blood culture media outside the body could not really represent even a fraction of the complex reactions and interactions of bacterial enzymes and their by-products with the ferments derived from leucocytes, blood plasma, and the other defensive organisations of the body.

The work of E. C. Rosenow,[4] confirmed by other writers, marks a very important advance, and opens up an entirely new conception of the biochemical affinities of bacteria. This author lays the greatest possible stress on the oxygen-tension of the environment, and has succeeded in isolating and artificially cultivating the specific organisms of given diseases, by employing culture media of graduated oxygen-tensions. By these and other means he was able to reproduce in animals actual diseases—e.g., myositis, iritis, nephritis, &c.—by inoculating them with the specific organisms isolated from the teeth or tonsils of his patients, and previously grown under partially anaerobic conditions, in graduated oxygen-tensions. If the affinities of bacteria can be controlled *extra vitam* by alteration of the oxygen-concentration, one is staggered by a contemplation of the possible complexities of vital fluids and structures in which they may have their habitat, in this one respect, alone. Oxygen-tension must, one would assume, be higher in vascular than non-vascular structures, such as fibrous tissue, thus affording us with an explanation of the frequency of "fibrositis" in obscure infective conditions, in which the discovery and removal of a "focus" has so often resulted in cure or alleviation of symptoms.

The result of infection by a bacterium of any particular structure would thus appear to be the sum of very changeable characteristics—both of the infecting agent and its environment—of which the oxygen-tension would now appear to be a proven factor. In the case of the skin, it is a matter for astonishment that lesions therein should tend to conform to type, instead of registering a new picture with every stimulus applied. The explanation, so far as it is possible, must lie in the anatomical uniformity of the parts reacting, and again on whether any given stimulus reaches them by way of the circulation, the lymph stream, the nerve endings, or from without.

Further discussion of so complex a problem would take us too far into the realms of theory and hypothesis, in the outskirts of which it may be said to be resting at the present time. Much further research will be necessary, both on the bacteriological, the clinical, and the biochemical sides, before effects and causes are more clearly perceived, and before the inevitable benefit then accruing to therapy can become an accomplished fact.

The following five cases constitute the series already referred to.

Pruritus.

CASE 1.—A widow, aged 62, first consulted me on June 1st, 1921, for pruritus of general distribution without visible manifestations. The condition had appeared six weeks previously, and had seemed to follow a nervous breakdown associated with dyspepsia and mental depression. Beyond operations on the pelvic organs and severe constipation for many years nothing in the personal history appeared to have an ætiological connexion with the symptoms complained of.

Physical examination revealed nothing suggestive either. The sallow complexion, with furred tongue and rather offensive breath, tallied with the history of chronic constipation. There was no jaundice. The teeth and gums appeared to be in very good condition, and there was no clinical evidence of sepsis in the tonsils or pharynx. Heart, lungs, and abdomen were apparently healthy, and beyond the dyspepsia and pruritus no other symptoms were complained of. The urine revealed no abnormality; ten years ago the case would probably have been regarded as one of senile pruritus, treated with copious doses of aperients, &c., and sent ultimately to some spa, where dietetics and balneotherapy would have received the expensive credit for any alleviation that might have occurred.

While I was treating the patient on these lines she developed dental trouble with slight pyrexia, and consulted Mr. C. A. Achner (late of Guy's Hospital dental department), who took a radiogram and found present several apical abscesses for which he advised extraction. Between June 10th and 16th eight teeth were removed, and a note from the pathologist, Dr. J. D. Benjafield (assistant pathologist, St. George's Hospital), dated June 13th, reported the recovery of a hæmolytic streptococcus, belonging to the pyogenes group, in pure culture from the apex of a root. A vaccine was prepared from the organism, and after the third injection the pruritus ceased entirely, and the general health had begun to improve.

On Nov. 8th the patient returned because of a relapse of the pruritus. A radiogram revealed the presence of two more apical abscesses which must have developed in the interval. Drainage of the cavities by extraction again resulted in complete relief of the symptoms without any further vaccine treatment; it is more than likely that the symptoms would have disappeared without the administration of vaccine in the first instance.

Erythema Multiforme.

CASE 2.—A married woman, aged 48, was first seen on August 19th, 1921, with a generalised ringed eruption of urticarial type, and with a tendency to confluence on the arms and legs. The neck, face, and scalp were free. The eruption was not scaly, but intensely hyperæmic and congested in appearance; its configuration led me to place it in the erythema multiforme group, although there were no lesions of the mucous membranes. She had noticed it first in the summer of 1919, and this particular attack lasted with remissions for about two months, when it spontaneously disappeared. A similar attack of longer duration, with severe subjective symptoms of burning and itching, prostrated her in the summer of 1920; the eruption which had led her to consult me had been present about ten days. The only positive feature in her physical examination was the presence of marked dental sepsis, pyorrhœa, and oral fœtor, and I

[1] Barber, H. W.: Guy's Hospital Reports, October, 1921, Protein Sensitisation.
[2] Roberts, H. Leslie: British Journal of Dermatology and Syphilis, October and November, 1921, Focal Infection.
[3] Roberts, H. L., quoting Rosenow, E. C.: Journal Inf. Dis., 1914, xiv., p.1.
[4] Rosenow, E. C.: Results of Experimental Studies on Focal Infection and Elective Localisation, Section of Stomatology, 1921, A.M.A., Boston; and Newer Bacteriology of Various Infections, Jour. Amer. Med. Assoc., 1914.

formed the opinion that her symptoms could, with fair certainty, be attributed to septic absorption from this source.

I advised complete clearance of the mouth, and the dentist having concurred with this drastic procedure, the patient agreed, and all the teeth were removed. On Oct. 10th, the eruption being then still present, Dr. Benjafield reported the successful culture of a pure growth of *Streptococcus viridans* from the pulp of extracted teeth. The lesions began to fade a week after the clearance, and the subjective symptoms had completely disappeared before she attended for her first vaccine injection on Nov. 12th. About 36 hours after the fourth inoculation (15 millions), Nov. 30th, there was a return of the pruritus on the legs, but it only lasted a few hours, and there was no recrudescence of the eruption, which by this time had completely disappeared.

Chronic Urticaria with Subcutaneous Nodules.

CASE 3.—A man of 54 was first seen on Oct. 18th for severe general itching which had disturbed his nights and threatened for about a month to interfere with a very arduous business career. Additionally there was "acidity," "heartburn," and anorexia, and the patient had a flabby unhealthy appearance not entirely the result of his sedentary habit.

His organs revealed no striking abnormality, and the urine contained neither albumin nor sugar. The skin lesions were very sparse, and when I first saw him they were confined to the forearms—three or four small subcutaneous infiltrated nodular lesions on the extensor aspects about the size of a haricot bean, and intensely irritable. The colour of one of them was pale pink, urticarial in type, and not unlike an atypical example of erythema iris. There was marked dermatographism. The gums were streaming pus, and on inquiry I elicited the important information that eight teeth had been removed in 1920, with ensuing relief to a severe attack of sciatica, for which all other treatment had failed.

On Oct. 21st Mr. Maxwell Stephens removed a molar tooth, and Dr. H. Pritchard (pathologist, West London Hospital) attended at the extraction and made a direct culture, both from the fang apex and from the split pulp. On the 26th he reported a pure growth of a short-chained streptococcus from the fang, and a mixed growth of streptococcus, *Staphylococcus albus*, and *B. subtilis* from the pulp. A vaccine was prepared from the former, and a course of five injections rising from 5 millions to 50 millions on Nov. 11th was administered without producing any reaction, and with some improvement both of the pruritus and the general health.

On Nov. 9th, with the concurrence of Dr. H. W. Barber, whom I called in for consultation, it was decided to remove all the remaining 13 teeth except two in the lower jaw, for the purpose of fixing the lower denture subsequently. The operation was performed by Mr. Stephens under gas and ether on Nov. 23rd. Within 48 hours the itching had entirely ceased, and recovery was uneventful except for protracted somnolence which lasted with intervals for a week. Dr. Pritchard was again present at the clearance and again found a short-chained streptococcus, "easily the predominating organism, and doubtless the infecting agent in this case." On Feb. 1st, 1922, the patient reported that he was now completely free from fresh lesions and from his pruritus.

Chronic Urticaria.

CASE 4.—A married woman, aged 50, sent to me by Dr. J. W. Patrick, of Leicester, Nov. 17th, with a three years' history of chronic urticaria, informed me that she had had attacks of itching in spring and autumn before the war, but there was no eruption until two years ago, when, on the day following extraction of two teeth, large wheals suddenly appeared on the backs of both hands. They had been present on various parts of the body on and off ever since, and she was persuaded, three months after their first appearance, to submit to removal of all her teeth.

When I first saw her there were no lesions of any kind, nor could I obtain the dermatographic reaction. The only cutaneous abnormality present was slight œdema on either side of a ring on the fourth finger of the left hand.

She was wearing double dentures, and on removal of the lower one I noted a small infective focus in the middle line of the lower jaw, which, so the patient informed me, covered the relic of a stump left behind at the extraction of her teeth in February, 1919. Mr. Achner removed this on the same day, and on Nov. 18th Dr. Benjafield reported the growth of a *Streptococcus viridans* which constituted 98 per cent. of the total number of colonies grown.

The vaccine was sent to Dr. Patrick, who wrote on Dec. 13th to say that the patient had just recovered from a severe attack of influenzal bronchitis, and that the "urticaria is much less troublesome." He went on to doubt causal connexion between that improvement and the extraction, as her influenzal infection might have temporarily benefited the skin reaction. With this view I was entirely in agreement. It is a well-known fact almost all chronic skin ailments—e.g., eczema, psoriasis, and even scabies—show temporary improvement during and following an acute illness, only to relapse when the effects of this have passed away.

On Jan. 1st Dr. Patrick again wrote to say, "Skin irritation is much better on the body, though troublesome at times on the face and hands. My impression is that the vaccine so far is doing good. She has had some reaction after each dose—temperature 100° F. for a few hours, and some nausea." The extra stimulus of light, air, and water on the exposed parts of the body may be in some degree responsible for the persistence of pruritus on these parts.

Furunculosis.

CASE 5.—The patient, a married woman, aged 43, was referred to me by Dr. J. E. Knox, of East Molesey, on Nov. 24th, with a history of severe recurrent boils on the face and neck over a period of four years. There was a single large furuncle on the left cheek at her first visit, and she seemed very debilitated and depressed. The usual examinations were all negative. With the exception of three teeth crowned with gold many years ago, she was practically edentulous, and the appearance of these did not warrant a suspicion of their infectivity. She admitted, however, that there had been "gumboils" round one of them a year ago, and readily consented to my proposal that an X ray photograph should be taken. The results of this examination clearly proved that the fang of the crowned canine tooth in the right lower jaw was lying in an abscess cavity. Extraction of this and the other teeth, which Mr. Achner reported as unhealthy, was subsequently undertaken; Dr. Benjafield prepared a vaccine from the *Streptococcus viridans* grown, which was the predominating organism, and constituted 80 per cent. of the total number of colonies.

The striking feature in this case at the date of writing (Dec. 30th) is the very great improvement in her general health, and feeling of well-being. There is still some persisting infiltration of both cheeks, the sites of old boils, and the patient informs me that after injection of the vaccine (which is being given every five days), there is a feeling of discomfort and heat in the cheeks and on the neck at site of old trouble, which would persist for a few hours, and at first caused her to fear the beginning of new infections. None of these have, however, recurred since the teeth were removed.

It is generally admitted that in some cases of chronic furunculosis the removal of a septic focus will lead to a cure of the condition. The mechanism of cure, which is, of course, not a simple one, may perhaps be:

(1) The removal of an associated micro-organism—e.g., streptococcus—in a distant focus, acting as an adjuvant to the staphylococcal infection.

(2) Reduction of the excessive blood-sugar, which is commonly present in such cases, by an improvement in the patient's digestive power, and general metabolic activity, when the infecting teeth have been removed.

Remarks.

The following points seem to me of interest in this short series:—

1. *Furunculosis*, *urticaria*, *pruritus* (i.e., itching without lesions), and *erythema multiforme* can be associated with more or less severe dental sepsis, and may disappear when these sources of infection are radically dealt with.

2. The *Streptococcus viridans* and *hæmolyticus* appear to have been the organisms mainly responsible in my series. The reader will not need reminding that both—in fact almost all varieties of this organism—are normally present in the mouth. Rosenow states that evidence has been obtained "why infections in certain foci, such as those at the apical end of devitalised teeth remain symptomless, and at the same time may be the source of metastatic infections. Microscopic sections show that the bacteria are not usually encapsulated in the thick wall of connective tissue of granulomas remote from blood-vessels. . . . Opportunity for drainage into the circulation appears ample, swelling and tension do not occur, and hence the focus usually remains unsuspected because there are no local symptoms." (Cp. my cases 2, 3, and 5.) The point that seems to me to require elucidation is the port of entry. Does a bacterium or its products get into the circulation more easily by way of the apex of a tooth, than, e.g., round the neck? In other words, is

apical infection a necessary corollary of dermatological or of constitutional effects? A good deal of light could be thrown on the subject by X ray investigation of every case where dental infection is suspected. But the reading of plates and prints—I write from a considerable experience of radiography during the war—requires an expert, who must be unbiassed.

3. Because in five cases dental sepsis would appear to have been the cause of certain skin manifestations, it would be unwise to argue that the types of skin lesions discussed are necessarily always associated with dental infection. It is, however, hardly open to denial that in dental infection of a certain type we may have hit upon one cause—and that an easily accessible one—for the production of urticaria, erythema multiforme, intractable furunculosis, and pruritus of otherwise unknown origin.

Every case must be investigated on its own merits, and this paper aims at no more than indicating a by-path in which valuable information may sometimes be found.

VELOCITY OF TRANSMISSION OF THE PULSE-WAVE

AND ELASTICITY OF ARTERIES.

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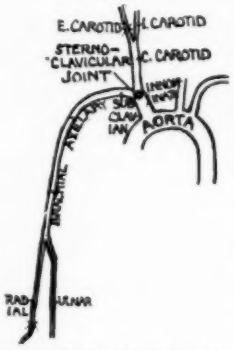
IN the course of an investigation in which we are at present engaged we have had occasion to make a considerable number of observations on the velocity of transmission of the pulse-wave, both in health and in disease. Since the technique is simple, and the records yield very accurate measurements, it seems likely that the method employed will not only be of service in the investigation of problems of purely scientific interest, but may also have a practical application in the field of clinical medicine.

Method Employed.

In order to determine the velocity of transmission it is necessary to measure the time taken by the pulse-wave to travel along a known length of artery. Most of our observations have been made on the upper limb. Synchronous sphygmograms of the right carotid and right radial pulses are recorded, and measurements made from the right sterno-clavicular articulation to the points in the neck and wrist from which the two records are obtained (Fig. 1). The right sterno-clavicular articulation corresponds to the point of bifurcation of the innominate artery. Hence the interval which elapses between the commencement of the carotid and radial deflections respectively is the time taken by the pulse-wave to travel from the sterno-clavicular joint to the wrist, less the distance from the same point to the carotid.

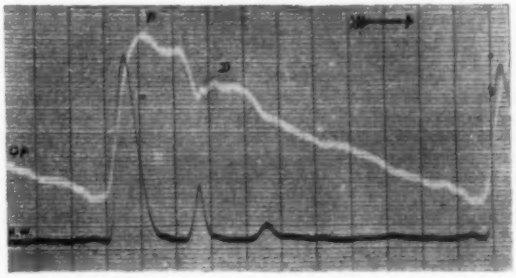
FIG. 1.



Anatomical diagram of measurements taken in estimating pulse-wave velocity in upper limb. Receivers are placed on the cartoid and radial arteries at points marked with a cross.

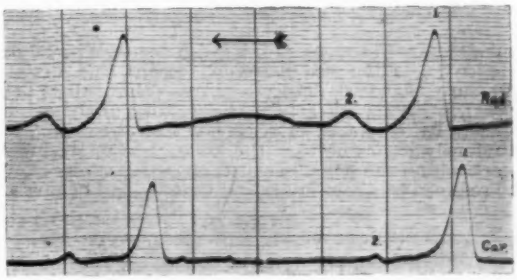
The general features of the hot-wire sphygmogram have previously been described.[1 2] The primary wave, with which alone we are concerned in the present paper, corresponds in time to the rapid rise of pressure which follows immediately on the arrival of the pulse-wave in the artery under investigation (Fig. 2). The radial and carotid pulses may be recorded separately by employing two bridges and two galvanometer strings (Fig. 3), or may be combined to form a single record by connecting the two hot wires in parallel to the same bridge, so that their alterations in resistance are recorded on the same string of the galvanometer (Fig. 4).

FIG. 2.



Synchronous optica and hot-wire sphygmograms obtained by connecting the two recording instruments in series to the same receiver. Thus, points on the two curves which fall in the same vertical plane are synchronous records of the same event in the carotid cycle. It will be seen that the primary wave of the hot-wire sphygmogram is synchronous with the upstroke of the percussion wave in the optical record. Op = Optical sphygmogram. H.W. = Hot-wire sphygmogram. P = Percussion wave. D = Dicrotic wave. Time intervals 0·099 sec. Record reads from left to right.

FIG. 3.



Radial and carotid sphygmograms recorded on separate strings. Time interval 0·2 sec. Record reads from right to left. 1. = Primary deflection. 2. = Secondary deflection. Rad. = Radial. Car. = Carotid.

Results Obtained.

Table I., which contains the results of a small number of observations on normal healthy individuals, shows that there is a general agreement between age and pulse velocity. The older the subject the more rigid are his arteries, and the higher the velocity of transmission of the pulse-wave. With a large number of observations it would be possible to plot a curve representing this relationship, and even the small number of figures in Table I. is sufficient to give some indication of the general disposition of this curve (Fig. 5).

Under pathological conditions, on the other hand, this relationship between age and pulse velocity is no longer present, as will be seen from Table II., which is compiled from observations on a miscellaneous collection of patients in hospital suffering from the various diseases mentioned. The data at our disposal are at present insufficient to enable us to draw any general conclusions with regard to the alterations in pulse velocity which are met with under different pathological conditions, but that such alterations do occur is already sufficiently evident.

Theoretical Aspect.

Elasticity of the arterial walls is a factor of fundamental importance to the circulatory mechanism. It is owing to this property that the arteries are able to

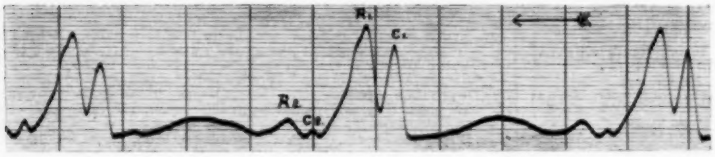
* Working on behalf of the Medical Research Council.

transform an intermittent cardiac output into a continuous capillary flow. The more perfect the elasticity of the arteries the greater will be the volume of blood which they are able to accommodate for a given rise of pressure. Now the amount of energy expended by the heart per beat, as measured by its oxygen consumption or CO_2 output, has been shown to be proportional to the pressure developed;[3 4] hence the amount of energy which the heart has to expend per beat, other things being equal, varies inversely as the elasticity of the arterial system. Conversely, the more elastic the arteries the smaller will be the decrease in pressure for a given decrease in volume. Hence the difference between systolic and diastolic pressure, that is the pulse pressure, other things being equal, will vary directly as the rigidity of the arterial walls. In the interests of an efficient circulation it is obviously desirable that the amount of unproductive work which the heart is called upon to perform should be reduced to a minimum, and that the fall of pressure in the arterial system, associated with the passage of blood to the capillary area, should be as small as possible. That is to say, *the greater the alteration in the volume of the arteries in response to a given alteration in pressure the more efficient will be the arterial mechanism.*

TABLE I.—*Showing General Relationship of Age to Velocity of Transmission of Pulse-wave in Normal Healthy Individuals.*

Age (years).	Velocity (metres per sec.).	Age (years).	Velocity (metres per sec.).
6	4·7	32	7·2
20	6·0	35	6·6
24	6·7	51	7·4
28	7·5	66	8·5

FIG. 4.



Radial and carotid sphygmograms recorded on same string. Time intervals 0·2 sec. Record reads from right to left. C^1 = Primary carotid deflection. C^2 = Secondary carotid deflection. R^1 = Primary radial deflection. R^2 = Secondary radial deflection.

FIG. 5.

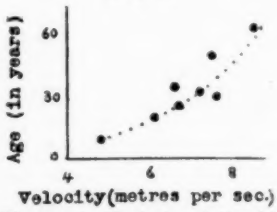


Diagram to illustrate relationship of age to velocity of transmission of pulse-wave in normal healthy subjects. Compiled from figures in Table I.

TABLE II.

Velocity.	Age.	Disease.
5·5	18	Rheumatic fever, aortic incompetence.
6·2	33	Aortic incompetence.
6·5	35	Pernicious anæmia.
6·5	53	Thoracic aneurysm.
6·5	62	Thoracic aneurysm.
6·9	16	Rheumatic fever, aortic incompetence.
7·0	64	Complete heart-block.
7·3	50	Pernicious anæmia.
7·3	18	Thoracic aneurysm.
7·4	23	Neurasthenia.
8·3	48	Chronic lead poisoning.
8·5	36	Septic endocarditis, mitral stenosis.

Now we have shown in a previous paper[6] that the velocity of transmission of the pulse-wave may be expressed by the formula:—

$$\text{Velocity (in metres per sec.)} = 3{\cdot}57 \Big/ \sqrt{\%\text{ increase of volume per mm. Hg increase of pressure.}}$$

Hence, we may conclude that an artery is the more efficient the lower be the velocity of the pulse-wave in it. In other words, in the velocity of the pulse-wave we have a criterion of the efficiency of one very important factor in the circulatory mechanism.

Direct Measurements of Pulse Velocity in Isolated Human Arteries.

The relationship of volume to pressure in isolated human arteries was measured directly by Roy.[5] His experiments, however, are compromised by the fact that the volume changes were induced gradually; and, owing to the "elastic after-action" of the tissues, the rise of pressure was less than would have been the case if the alteration of volume had been brought about suddenly, as is actually the case in the living body. We have recently devised a method by which it is possible to estimate directly the velocity of transmission of the pulse-wave in isolated human arteries obtained from the post-mortem room, and so, if required, to deduce the percentage increase of volume per mm. Hg rise of pressure. Only a small number of experiments have been performed hitherto, but the results obtained by this method agree closely with the observations made in the living body with the hot-wire sphygmograph.

Application to Clinical Medicine.

When it is possible to palpate a thickened radial artery at the wrist, or to recognise the characteristic changes in the vessels of the retina, direct evidence of arterio-sclerosis may be present; but in a large number of cases the diagnosis of this condition has to be based on circumstantial evidence such as that afforded by high blood pressure or by the presence of certain diseases known to be associated with arterio-sclerosis, in particular, chronic interstitial nephritis and gout. Under such circumstances direct evidence would be of considerable value; and this evidence may be obtained by measuring the velocity of transmission of the pulse-wave. Again, accurate measurements of the velocity of transmission of the pulse-wave may be of value in the diagnosis of aneurysm. In vessels involved in aneurysmal dilatation the progress of the pulse-wave is delayed. Such delay may be sufficiently obvious to be recognised by the finger; but in a large number of cases the delay is so small that it can only be demonstrated by instrumental methods.

Summary.

1. By means of the hot-wire sphygmograph it is possible to obtain accurate measurements of the velocity of transmission of the pulse-wave.

2. In health there is a relationship between age and pulse-wave velocity. This is not so in disease.

3. Pulse-wave velocity is an index of arterial elasticity, which is one of the most important factors in circulatory efficiency.

4. Direct measurements of pulse-wave velocity in isolated human arteries agree closely with the values obtained by means of the hot-wire sphygmograph in the living subject.

5. The measurement of pulse-wave velocity affords direct objective evidence in the diagnosis of arterio-sclerosis and aneurysm.

In conclusion, we wish to thank the physicians and assistant physicians of the Manchester Royal Infirmary for the facilities granted us for making observations on their patients.

References.—1. Hill, A. V.: Journal of Physiology, liv., p. 117, 1921. 2. Hill, A. V.: Ibid., p. 53, 1920. 3. Rohde, E.: Zeitschr. physiol. Chem., lxviii., p. 181, 1910. 4. Rohde, E., and Nagasaki: Zentlbt. Physiol., xxvii., p. 114, 1914. 5. Roy, C. S.: Journal of Physiology, iii., p. 125, 1880. 6. Bramwell, J. C., and Hill, A. V.: Proc. Roy. Socy., B, 93, p. 300, 1922.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF UROLOGY.

TESTS OF RENAL FUNCTION.

A MEETING of this section of the Royal Society of Medicine was held on April 27th, Sir THOMAS HORDER, the President, in the chair, when the discussion on this subject, adjourned from Nov. 24th, 1921, was resumed.

The PRESIDENT said that the discussion had originally been intended to offer members an opportunity of displaying new work on the subject, but very little new work had been recorded. The medical aspect of renal efficiency tests had not been so far discussed; and he felt that the surgical aspect of the subject would be clarified if the medical aspect of renal tests received some attention at that meeting. There were some points upon which he was left in doubt. When the tests were applied as a guide to the surgeon in the question of operation and revealed kidneys of doubtful efficiency on one occasion, would it not be advisable to repeat the tests on a later occasion? Prof. H. Maclean had stated that no deaths from renal failure after operation had occurred among cases which had given satisfactory tests, but added that deaths had occurred from sepsis, pneumonia, and general peritonitis. The President pointed out that all three of these conditions were common in renal inadequacy. None of the speakers had mentioned the urea content of the cerebro-spinal fluid, although he knew that work on this subject had been done by physicians. Had any Fellow tried the intravenous method of administering urea in the urea-concentration test? Dr. Mackenzie Wallis's $\frac{\text{blood sugar}}{\text{urinary sugar}}$ factor might have a future, but further data on this were necessary. In the previous discussion Mr. Girling Ball had raised the very important question of the "renal reserve," and the President considered that this question offered a field for further research which might prove fruitful.

The Best Tests for Different Types of Cases.

Mr. R. H. JOCELYN SWAN said that the surgeon employed renal efficiency tests in two distinct types of case: (1) Where the general renal efficiency was ascertained prior to an operation on the lower urinary tract; (2) where the efficiency of one kidney was in question prior to operation upon or removal of the other. In cases of type (1) he considered that the "blood-urea" test and the "urea-concentration" test were the most valuable; the results of these tests should be weighed in conjunction with each other. He considered it most important that the conditions as regards diet, &c., under which the tests were applied should be standardised, and described his practice in this respect. From his own observations and those of one of his clinical assistants, he concluded that too much weight should not be given to a somewhat high blood urea in later life, particularly where operation was demanded for malignant disease. He also thought it advisable to carry on the observations in the "urea-concentration" test to the end of the third hour, since at this hour the initial diuresis which often invalidated the test had generally passed off. The urea-concentration figure for the third-hour specimen was in fact the highest of the three figures in 45 per cent. of his cases. For cases of the second type the urea-concentration test upon the whole urine was of less value since a low figure for the combined urine of both kidneys might be due entirely to the low urea excretion of the diseased kidney. He therefore applied the urea-concentration test to the urine obtained from the kidney in question by the ureteric catheter. He did not now consider it necessary or advisable to allow the ureteric catheter to remain in position for three hours while tests were performed, but found that he obtained sufficient information from a small quantity of the urine obtained by ureteric catheterisation two and a half hours after the urea meal. It was advisable to avoid an anæsthetic if possible, since this interfered with the excretion of urine; if an anæsthetic was necessary he preferred gas and oxygen to any other. He placed no reliance on the relative quantity of urine excreted by each kidney since he had occasionally found the diseased kidney to excrete the larger quantity. He had little confidence in any of the dye-excretion tests other than the indigo-carmine one. When administered intravenously the drug was excreted rapidly, usually within seven minutes, from a normal kidney, and the excretion could be recognised by simple cystoscopy. Delay in excretion from one side was only associated with disease of the corresponding kidney. In conclusion, he added that laboratory tests only formed one link in the chain of evidence—the clinical signs of renal inefficiency were in themselves sufficiently definite in the majority of cases.

The Criteria for Selection of Tests.

Sir J. THOMSON WALKER said that two criteria should govern the selection of tests of renal function: (1) ease of application, and (2) reliability. Two tests which had not received much attention—namely, the electrical conductivity of the urine and blood, and the diastase test—failed; the first because it required elaborate apparatus, and was even then unreliable, and the second from want of reliable figures of the normal limits of variation. As regards colour tests, he had found that the indigo-carmine test would demonstrate, by delay in its appearance and diminished excretion, serious disease of the kidney, although it was not reliable in demonstrating moderate degrees of renal inefficiency. It possessed the advantage of being easily recognisable by chromo-cystoscopy without the necessity of catheterising the ureters. Phenolphthalein was employed upon a different principle, the quantity excreted during a certain time being measured colorimetrically and expressed in percentage of the original amount of the dye introduced. Few of the speakers who had mentioned this test had given it any measure of support; he thought possibly because the English manufacturer had not been able to make so good a drug as was obtainable from Germany in pre-war times. Dye tests as a whole depended on an assumed parallelism between the excretion of nitrogenous bodies in the urine and of certain dyes, which assumption was, he thought, open to dispute.

The urea-concentration test depended upon two assumptions: that diminished excretion of urea and increased excretion of water were due solely to disease of the kidneys. Variation in the quantity of water, however, was well known to occur in some forms of extra-renal disease. Prof. Maclean limited the diuresis to 120–130 c.cm. of urine in the hour. If the diuresis were over this figure, and the percentage of urea under 2 per cent. "the renal condition was not very satisfactory." Sir J. Thomson Walker then quoted a case where pronounced polyuria existed with a stone in the lower ureter and was relieved by extraction of the stone. He considered that as much information could be obtained from the estimation of the urea percentage in an ordinary 24-hours specimen, and that the urea-concentration test, although valuable in many cases, failed in just those difficult cases in which we most required its help. As regards the reserve renal function, which in some cases might amount to 50 per cent. of the total function, any method of measuring this would be most helpful. Albarran had found that a diseased kidney had a function, which remained persistently at a certain reduced level, while the normal kidney reacted to stimuli by increased function. McCasky devised the method of plotting out a curve of forced excretion apart from the percentage composition of the urine. The important points in this curve would be the time taken to react to the

stimulus, and the rapidity with which the reserve power of the kidney was brought into action as shown by the steepness of the rise, and the amount of renal reserve as shown by the height of the curve and the rapidity of return to the average function. A balance-sheet between the urine-urea and blood-urea would appear at first sight to supply all the necessary information as regards renal function. Two important factors—(1) the unknown reserve power of the kidney, and (2) the supply of nitrogenous material to the blood—had to be reckoned with. On account of these factors the appearance of an increase in the blood-urea was found to mark the point at which the reserve power of the kidney had been destroyed, and at this stage the symptoms of renal failure were, as a rule, so evident as to need no confirmation. In a few cases the symptoms of uræmia were very slight or indistinguishable from other forms of disease; in these cases the discovery of a high blood-urea was of the utmost value in clearing up the diagnosis. The effect of diet on reducing the blood-urea shows how carefully this figure should be scrutinised before being accepted as indicating renal inefficiency. The urea-concentration factor, in his opinion, merely added an unnecessary figure. As a surgeon, he obtained more clinical knowledge from a report that stated the amount of urea in the blood and in the urine.

The Limited Scope of Renal Function Tests in Surgical Diseases.

Dr. GEOFFREY EVANS wished to draw attention to the limited scope of renal function tests in surgical diseases of the urinary tract. He had had the opportunity of making post-mortem examinations of patients who had died after prostatectomy, and had found that one of the commonest lesions present after death was an acute interstitial nephritis. The cause of death in such a case might be uræmia, bacterial toxæmia, or septicæmia. It was of secondary importance which of these was the actual cause of death. The important fact was the extent of the infection in relation to the patient's resistance to this infection. A physician was frequently consulted as to whether a patient was fit for an operation on the urinary tract. His experience was that the presence of deficient excretory power of the kidneys was nearly always clinically obvious, and that renal function tests served chiefly to confirm its presence or absence, or to determine its degree. This was but one aspect of the problem. The more difficult aspect of the problem was, in the first place, to form an opinion as to the patient's general power to resist infection, and in the second place to form an opinion as to the presence of a weakness in resistance to infection in one or other of the main systems of the body. If the patient's resistance as a whole were inadequate he would run the risk of death from septicæmia. If the kidney resistance were defective he would die with acute interstitial nephritis and of uræmia or septicæmia. If the pulmonary resistance were defective, perhaps as a result of myocardial weakness, he would die with broncho-pneumonia and perhaps of heart failure. Similarly, he had seen a case die of malignant endocarditis. His experience in the post-mortem room had emphasised the importance of infective complications following surgical interference with the urinary tract, and in the period of pre-operative examination and treatment the opinion formed as to the power of the body and the kidneys to resist infection must not be lost sight of, as it often was, when the reports came to hand that urea and chlorides and certain dye-stuffs are well excreted.

The Results of the Diastase and Urea-Concentration Tests.

Dr. G. A. HARRISON described the results of the diastase test. A number of tests performed in America lost any possible value from the fact that the diastase in the urine only was investigated, while the amount in the blood was neglected. Dr. R. D. Laurence and the speaker had investigated the diastase in both the urine and the blood in a number of cases which included some of renal disease. The normal blood diastase was represented by a figure of between 3–10 units, and the normal urine diastase exhibited a similar variation between 6–20 units. In renal disease diastase tests revealed three different types: (1) diminished excretion with retention, (2) diminished excretion without retention, (3) a type where both the urinary diastase and the blood diastase were normal. As regards the first type the diastase excretion only fell off when three-fourths of the kidney tissue was destroyed. In the second type there were a number of non-renal cases, and he suggested that diminished excretion without retention of diastase in the blood was due to depression of metabolism from any cause, or to a low diet, or to both. The test, in fact, was dependent on a number of non-renal factors and would only give evidence of renal inefficiency when the inefficiency was so far obvious as to make tests superfluous. As regards the urea-concentration test, in his opinion, the diet during the time of the test was immaterial. The rationale of the test was that the blood was swamped with urea, in order to discover the ability of the kidney to excrete urea in a high concentration. In his opinion, the "total urea" was not nearly so valuable a figure, and further, it was under the disadvantage that in prostatic cases it was not always possible to collect all the urine.

Conclusions after 12 Years' Experience of Various Tests.

Mr. S. G. MACDONALD stated the conclusions at which he had arrived after some 12 years' experience of the various functional tests. These fell under two headings: (1) The general renal function in operations on the lower urinary passages, as a type, prostatectomy; (2) the efficiency of the second kidney in nephrectomy. 1. The general renal function in prostatectomy. He had passed through the various phases from the earlier colour tests to the more recent chemical ones—viz., the urea concentration of the blood and the urine. As quantitative tests the dyes were not a success, methylene-blue was too laborious and phthalein open to too many inaccuracies. As time tests he had used both phthalein and indigo-carmine, but had come to the conclusion that the clinical findings were more important than any dye or functional test, and, in fact, he doubted how far any one test should influence one in delaying the second stage of a prostatectomy provided the clinical condition was satisfactory. For some time he relied on the clinical manifestations alone, and he was still of the opinion that the factors which make for successful results were experience in dealing with this type of case, due recognition of the clinical signs and symptoms of renal insufficiency, and careful preliminary observation of the patient (daily secretion of urine, urea excretion, temperature, blood pressure, &c.); and personal preliminary and after-treatment. These were more important than any functional test. He thought his own prostatectomy results supported this conclusion, for in the last 50 cases in private practice he had one death only, and that not a renal death. In this series 11 were two-stage operations; several were actually uræmic when he saw them first, but by careful preliminary treatment (forced hydrotherapy with a retained catheter) were steered successfully through a two-stage operation. Latterly he had made use of the urea-concentration test on account of its simplicity and also because it corresponded more nearly to the clinical findings. He had found in some cases that the maximum urea output occurred in the third hour rather than the second—other tests being normal. With regard to the blood-urea, this test could be taken only in conjunction with other tests, since a normal percentage of urea in the blood might have a 75 per cent. margin or none at all. Dr. Maclean in his paper pointed out its numerous fallacies, especially in regard to diet; until he had had more experience of the test he could not gauge the upper limit that negatived operation. 2. In the second class of case—i.e., the function of the second kidney in nephrectomy—the various tests played a more important rôle. His practice now was to catheterise the ureters and give an intramuscular injection of indigo-carmine into the

gluteal muscles. The time of appearance of the dye was noted in each case and no further account taken of the test. Urine sufficient for microscopic examination and estimation of the urea percentage was collected from each kidney, and finally the blood-urea was examined. If the good kidney produced the dye in seven to ten minutes, showed a good urea percentage, and if the blood-urea was normal, he had no anxiety about nephrectomy. Sir J. Thomson Walker had mentioned the disappearance of albumin and casts after removal of a ureteric calculus. This was most important as illustrating the depressing effect upon the sound kidney of disease in the other side (Albarran's toxic nephritis which clears up after nephrectomy). He inquired whether the blood-urea was normally reduced during pregnancy as he had found this occur in one or two cases.

The Blood-Urea Test.

Dr. J. R. MARRACK said that he thought the most valuable test was the blood-urea one. If excessive intake and formation of urea were excluded, a blood-urea of over 50 mg. to 100 c.cm. implied that the kidney could not keep pace with its daily task. The great majority of patients with enlarged prostates whose blood-ureas remained above this height proved unsuitable for operation. Normal figures for blood-urea might be found in patients with fairly severe degrees of renal inadequacy. In other tests the difficulty was due to the overlapping of the ranges of figures given by patients with different degrees of renal impairment. Fallacy arose from applying average values to an individual case. Thus with phenolsulphonephthalein normal excretion in two hours might be as low as 40 per cent., while patients with undoubted kidney damage might excrete as much as 50 per cent. With the urea-concentration test especially the range 2·0 per cent. to 2·5 per cent. is a doubtful zone into which might fall both normals and patients with renal efficiency damaged to a degree such as to be of practical importance. With phenolsulphonephthalein he had found lower figures than were usually reported. It is possible that different preparations of phenolsulphonephthalein differed in the readiness with which they were excreted. With the urea-concentration test it would be advisable to cut down the water intake as much as possible beforehand in order to get the kidney to excrete as concentrated a urine as it could and to put the standard for normal higher. Even when the water intake was not strictly limited a percentage of under 2, with the water excretion not exceeding 130 c.cm. per hour, almost always indicated definite renal impairment. In patients with enlarged prostates all who had a phenolsulphonephthalein excretion above 30 per cent. in two hours or who gave over 2·5 per cent. with the urea-concentration test, did well. Many did well who gave much lower figures. He did not consider that the diastatic index was of practical value in surgical work, and he added, in reply to Mr. MacDonald's question, that the blood-urea was normally reduced in pregnancy to about 20 mg. per 100 c.cm.

Clinical Points.

Mr. G. E. NELIGAN'S observations were complementary to those of the last speaker, in the sense that he, the speaker, was the clinical observer. He was inclined to give preference to the dye tests. While he agreed that phenolsulphonephthalein gave results which were subject to a considerable degree of variation, the same was not true of indigo-carmine, the excretion of which was easily recognised and provided a fool-proof test of renal efficiency which had the great advantage of being the last test to recover after the first stage of a two-stage prostatectomy. The blood-urea test recovered rapidly after the first stage, and, if relied upon, might tempt one to proceed to the second stage unduly early. He agreed with those speakers who had said that the most valuable tests were the ordinary clinical signs of renal inefficiency.

Mr. KENNETH WALKER had used the blood-urea test, urea-concentration test, and the indigo-carmine dye test. Sir J. Thomson Walker had pointed out the doubtful relationship between dye excretion and the excretion of the products of nitrogen metabolism. Nevertheless, Mr. Kenneth Walker had found that in practice the indigo-carmine test had proved most valuable, especially when the dye was administered intravenously. Chromocystoscopy after the injection of indigo-carmine in a female patient with hæmaturia had shown delay of two minutes only in the appearance of the dye from one side. Ureteric catheterisation on this side provoked hæmaturia, and subsequent exploration of the kidney disclosed a papilloma of the renal pelvis. Everybody had been let down occasionally by renal efficiency tests, but he doubted whether all the deaths were fairly attributable to renal failure. Many ascribed to this cause were, in his opinion, due to sepsis.

Mr. R. OGIER WARD described a clinical case. The patient was suffering from advanced tuberculosis of the right kidney. Urea-concentration tests and a blood-urea test gave satisfactory figures although the man looked ill. Nephrectomy was therefore carried out. The patient died 24 hours after the operation, having passed only 4 oz. of urine during that time. Post mortem the sound kidney was found to be small, and microscopically only a few of the tubules were functioning. An indigo-carmine test might have saved this patient, and the case illustrated the fact that where the two disagreed more reliance should be placed on the clinical signs than on the chemical test.

On the suggestion of the PRESIDENT, it was decided that the question of renal efficiency tests should be investigated by a committee of the section.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

A MEETING of this section of the Royal Society of Medicine was held on April 28th, when Sir ROBERT JONES, the President, occupied the chair, and delivered his presidential address entitled

THE TREATMENT OF PARALYSIS OF CHILDREN.

He deplored the tendency to view problems of disease from very limited aspects, to use the microscope rather than the telescope. The dramatic advances in medicine during the last 40 years rendered it impossible to be proficient in any but a limited section of the science, but this section for the study of disease in children had the great value of bringing the physician and surgeon together in a common fold. In a hospital in the States which he had visited with Sir Anthony Bowlby, Harvey Cushing with his class was to be seen going round the orthopædic wards with R. W. Lovett and his class, and a return visit was paid around the neurological wards. Such reciprocal rounds in our teaching hospitals would be useful. A surgeon approaching a group of cases with potential deformity, such as the osteo-arthritic, with his mind obsessed by deformity, was apt to think his whole duty was to correct this, making no serious attempt to check the infection; while the physician might ignore the sure onset of deformity in his eagerness to discover a microbe. This was obviously wrong. In wards filled with these cases, ankylosing ankles in full extension, flexed knees and hips and crooked spines, all preventable, were still to be seen. The knowledge that these cases had both a surgical and medical aspect would be most useful to the country practitioner, and would relieve him of much responsibility.

Anterior Poliomyelitis.

Paralyses in children required the close association of neurologist and surgeon; yet poliomyelitis, the most common, need not be attended by paralysis; it was incidental, not essential. In several cases he had been unable to obtain a history of an acute beginning. In very many cases hyperæsthesia appeared before the paralysis, and some adolescents—from whom a more reliable history was obtainable—spoke of a numbness preceding the loss of power, some of a

burning sensation, others of shooting pains. If there was very transient pain, or none, the acute stage lasted about six weeks, but so long as there was pain active irritation of the cord persisted. To establish the diagnosis of this disease lumbar puncture was necessary; it was the only way to secure the isolation of the abortive case, and it secured rest in the pre-paralytic case. America had alarming epidemics of this disorder. Lumbar puncture was also of benefit as treatment in the acute stages. Its second stage lasted two years, and during this period the motor area was frustrated in its efforts to send impulses to muscles. Later some of the paths recovered, trophic disturbances began and affected both circulation and growth, and unless appropriate measures were adopted deformities appeared. Mostly the surgeon came on the scene only in time to correct conditions which should not have arisen, when it was too late for preventive measures. If a muscle retained its faradic excitability a few days after the onset a good prognosis might be given. The President had seen a case in which a muscle had only begun to improve after three years of complete paralysis.

Treatment from Onset to End of Second Stage.

With regard to treatment, from the onset of the disease to the end of its second stage, it was important to avoid meddlesome methods; muscles regarded as paralysed might only be weak; one showing the reaction of degeneration was not necessarily outside the pale of hope. At the stage of onset one must trust entirely to rest, and even then protect the weak muscles and obstruct the advent of deformity. The head and spinal column should be kept absolutely at rest; the appliance should be comfortable, and nothing should be done to frighten the child. During the active mischief, electricity and massage must be avoided, as also must applications of heat and cold; in fact, the damaged cord must be guarded from fussy therapy. With regard to the second stage, it must be remembered that a muscle which was submitted to stretching would lose its function, and there was a distinction between a muscle paralysed by destruction of its governing cell and one disabled by over-stretching. The President insisted strongly that a paralysed muscle must be kept relaxed, without any break in continuity, until the occurrence of recovery. As recovery progressed, relaxation must be lessened by small degrees, the extent of this being regulated by the patient's ability to use the muscle in the extended range. If a muscle was over-exercised it would begin to lose power. Deformities could be corrected by splint and bandage, and in the lower extremities gravity helped. The knife was never needed, except in extreme instances. As soon as a patient was made straight, the development of his muscles was attended to. Massage and exercise as usually practised in these cases brought into play most prominently those muscles which should rather be neglected. The masseuse must be instructed as to the exact line of conduct. Muscle-training was of extreme value and was based on a concentration of the patient's attention, so that brain cell and muscle worked in accord. Sir Robert Jones gave a number of instances and the details of treatment. Exercise without weight-bearing should be continued until the muscles had gained sufficient strength, and when the time came for walking it should be regulated with scientific precision. He did not approve of the immersion of the affected limb in a bath and allowing electricity to pass through the water. Shoulder contractions were obstinate and were due to paralysis of deltoid and overaction of pectoralis major and latissimus dorsi; the arm should be abducted from the first. Much could be learned from the gait of paralytics. For instance, if the gluteus maximus was paralysed, when weight was borne on the affected side the body was thrown back with a sudden lurch, and the patient hurried down with the other leg. If the hip flexors were involved, the affected limb was brought in front by a forward twist of that side. Unilateral paralysis of the abdominal muscles caused the patient to drop the pelvis on the weak side in taking the weight on the good leg.

Treatment in Third Stage.

In the third or chronic stage, when all the recovery to be expected had occurred, the task of the surgeon was to restore the patient to usefulness. The correction of deformity was essential; no muscle could be restored unless this was achieved. There was no reason for paralysis being allowed to be followed by deformity, except scoliosis. Splints were used with three objects: the prevention of deformity, the correction of deformity, and to assist the function of the upper arm, or locomotion in the lower limb. They should be simple in design and made of light material, and should be discarded as soon as they could be with safety. It should be carefully noted whether a splint prevented or induced secondary deformities. Deformity started as a postural malposition, became fixed by adaptive changes in soft parts, and progressed to permanent bony deformity in accordance with Wolff's law.

Types of Operation Sometimes Required.

Operations were of two types: (1) to stabilise the skeleton, (2) to restore muscular balance. Arthrodesis in the knee-joint was never necessary in children, very rarely in the adult. The stiff knee was better dealt with by applying a splint which allowed of flexion. This applied also to the hip. Arthrodesis of the shoulder was of considerable advantage when the deltoid was irrecoverable and the function of the rest of the arm was good. Before it was performed the muscles of the shoulder girdle must be working, as the object of the operation was to fix the head of the humerus into the glenoid at an appropriate angle, so that the arm could be moved by the scapular muscles. Unless the patient could shrug the shoulder with considerable power, arthrodesis was contra-indicated. Tendon transplantation was now beginning to appear in its true perspective, and the complicated operations of some years ago were no longer performed. It should, if performed, have a reasonable chance of improving function; it must be carried out with the idea of preventing or correcting deformity. Every case represented a separate anatomical problem; transplantation of tendon was not indicated unless there were normal tendons to transplant. Any attempt to overwork a transplanted tendon weakened it, and until it gained strength it should be treated as if it were partially paralysed. Massage and re-education should be conducted in the absence of weight-bearing. The operation of tendon-fixation had gained in surgical esteem. It consisted of the utilisation of paralysed tendons as ligaments. The tendency of modern surgery was to stabilise the ankle, and the surgeon used a variety of methods, which Sir Robert Jones described in some detail. He said there was no deformity to be met with which should baffle surgical art; it was upon recognition of sound principles in the after-care the surgeon depended for the restoration of function. Nerve transplantation was not now practised, and the war experience had taught that it should be discouraged in infantile paralysis.

EXHIBITION OF CASES.

Purpura Fulminans following Measles.

Dr. E. H. KELLY reported a fatal case of purpura fulminans following measles. On admission the child had marked erythema on arms and legs and a fading erythema on the trunk, with induration and swelling of the upper lip, fissuring of the lip, and induration of the inner half of the cheek. The temperature on admission was 102° F., respirations 56; bronchitis existed in both lungs. On account of the lip and cheek condition 30 c.cm. of antistreptococcal serum was given on the morning after admission, and on the fourth day the temperature was normal, the pulse was less frequent, and the respirations were 40. Eleven days after admission a blotchy erythema

appeared on the trunk and limbs, a serum rash. Four days later the temperature had risen to 103°, the general condition was poor, and the pulse rapid and small, but nothing could be found to account for it beyond a small patch of bronchial breathing and crepitations at the base. There was frequent vomiting. The child then developed petechiæ all over the trunk and limbs, and a butterfly-shaped patch of purpura over the cheeks and the bridge and tip of the nose. Two or three days later death occurred, but no post-mortem was allowed.

Dr. J. D. ROLLESTON agreed with the diagnosis, and discussed the question whether the use of the serum had anything to do with the condition, as purpura had been known to follow the injection of serum, even that of diphtheria antitoxin. He thought the effect of the serum could be eliminated in the present case.—Dr. E. BELLINGHAM SMITH considered the use of the serum an important factor in the fatal result. The child was well until the normal time for a serum eruption to occur. He described two similar fatal cases in which there were found hæmorrhages in both suprarenals.—Dr. F. PARKES WEBER said severe and fatal purpura was much associated with acute infections. Severe cases of meningococcal septicæmia had been recorded in which the only symptom during life was purpura, and the ætiology of these cases could not be cleared up without a careful bacteriological examination of the blood during life. In the absence of such in the present case he would hesitate to attribute the death to the serum.

Dr. DOUGLAS MCALPINE showed a boy, aged 6 years, suffering from Friedreich's ataxia with coloboma of iris and choroid. At two years of age he was found to have a very unsteady gait. There was nystagmus and a double coloboma of iris and choroid. It was very difficult to elicit knee-jerks, and ankle-jerks were absent. The boy also had double pes cavus, and equino-varus in the right foot. Wassermann reaction was negative.

Dr. MCALPINE also showed an example of congenital morbus cordis with coloboma of iris and choroid in a girl aged 11. The apex beat was outside the nipple line in the fifth space, and there was a systolic murmur in the pulmonary area, conducted well upwards. The Wassermann was negative, and there was neither clubbing of fingers nor cyanosis. The red blood cells were 4½ millions. Probably it was really a case of patent ductus arteriosus.—Prof. F. LANGMEAD agreed with this diagnosis.

Dr. DONALD PATERSON showed a case of familial cerebral degeneration in a child aged 6 months, who took no notice of his surroundings, and seemed to be going backward. The parents were healthy and were not Jewish. There had been 11 pregnancies, and eight children had died, seven having suffered in the same manner as the present child. At the fourth month this child became weak and apathetic, and now he was unable to see. He was not spastic, the discs were normal, the Wassermann negative. There was slight external strabismus. X rays showed marked rachitic bone changes. He gave his reasons for not regarding the case as one of amaurotic family idiocy, the subjects of which seldom died under 1 year of age.

HARVEIAN SOCIETY.

A MEETING of this Society was held on April 27th, Sir WILLIAM WILLCOX, the President, being in the chair.

A proposal that the Society should join the Federation of Medical and Allied Services was carried unanimously.

Dr. SIDNEY PHILLIPS opened a discussion on

INFLUENZA.

He said that since the year 1889 this country had never been free from influenza, as the mortality returns of the Registrar-General showed. The devastating epidemic of the autumn of 1918 had been preceded by many severe cases in 1916 and 1917 both in the army and in civil life. The nature of the bacillus of influenza seemed still to be questioned and the position might be summed up in the words of Sir Frederick Andrewes, in his report to the Ministry of Health, that the case for Pfeiffer's bacillus must be deemed unproven as regards its primary causal agency, though its intimate connexion with the disease is even more firmly established than before. But whatever the bacillus causing influenza, there was no doubt that its fatality was due in 1918 more to the complications which were attributable to other organisms, more especially the *Streptococcus hæmolyticus* and the pneumococcus. Dr. Phillips did not think that all cases were, as suggested, contracted through the medium of mucus sneezed or coughed upon another individual—the disease spread much too rapidly and widely for that, and other infectious diseases were not necessarily contracted in that way. Propaganda as to the infection being conveyed in families had been issued by the Ministry of Health, but the replies were too confused to be of any use. Dr. Phillips gave instances of the disease being conveyed in bedding and clothing and thought the practice of disinfecting these articles was not sufficiently carried out. Granting the infectivity of influenza, this was no solution of the question why epidemics suddenly started and spread over the world. Netter had said that just as cholera is endemic on the banks of the Ganges, so is influenza in the interior of Asia. Where the disease started in 1918 was disputable—it seemed probable the earliest cases were in Austria. It was no more evident why these epidemics cease than why they begin—the theory that they cease only when they have attacked everyone who is not immune might be set against the other theory that the disease gets increasingly virulent with each individual through whom it passes.

Previous epidemics had been said to attack chiefly at the extremes of age. This suggestion was based on mortality returns and did not represent the age-incidence of the disease. But all over the world the autumn wave of 1918 attacked the young adult from 18 to 35 in largest proportion; this occurred not only among the troops but in the civil population. As to sex, females were attacked as much as males; probably the fact that they were in many countries following occupations usual to men might account for this. The returns of M.O.H.'s throughout the country showed that house overcrowding did not increase the incidence of the disease; this was shown also in America. Moreover, rural districts and those sparsely populated suffered even more than crowded urban districts. In every country it was noticed how infection spread amongst those travelling in trams and railways, especially "tube" railways, which, by concentrating large numbers of persons in all stages of the disease in an atmosphere little changed, offered the conditions known to favour spread of infectious disease. Climate and season had less to do than might have been expected even with the severity of the pulmonary complications, and the disease was as fatal in the tropical heat of Brazil as in the frigid regions of Iceland.

As to identity of the disease named influenza in 1918 with that of 1889 and following years, Dr. Phillips did not think that those who had experience of both could feel any doubt. Doubts had been expressed on account of the acute onset, the epistaxis, and the nature of the pulmonary complications, but these only differed in severity and in relative frequency from those seen in 1889. The "glutinous" character of the pneumonia of influenza was noted by Goodhart in 1890, and long before that by Graves. Dr. French's admirable account of the clinical aspect of the disease could be found in the report of the Ministry of Health. The frequency of sinusitis and nephritis in the epidemic were then commented upon, but he (Dr. Phillips) had not met with many cases of albuminuria even in the "heliotrope" cases. Encephalitis had occurred frequently in previous epidemics, and cases

were alluded to by Goodhart in which ophthalmoplegia was noted.

Dr. Phillips could not accept the theory that these were simply varieties of influenza; they appeared to be accompanying diseases set up by the accompanying organisms. Immunity from influenza had been claimed for individuals. It was difficult to disprove in any individual case, but nurses often got scarlet fever after years of nursing in a scarlet fever ward, and so it happened that the reputed immune individual might get a disease under conditions we could not define. Certainly some individuals seemed more disposed to catch influenza than others. Immunity to some extent must result from an attack, for every day observation showed that a person just attacked was less likely to get the disease than one who had not been attacked. He did not think that any drug had been proved to ensure immunity, and as to vaccines the report of the Ministry of Health was that the results are not sufficiently substantial or uniform to lead to any definite conclusions, though there are other indications that the use of vaccines did reduce in some cases the risk of fatality. The epidemic of 1918–1919 led to more deaths in every part of the world than could ever be known. Dr. Phillips thought that the effects of the epidemic in 1889 and its prevalence ever since then of influenza had had much more effect on the deterioration of the physique of the population than had been credited to it.

Further Clinical Points.

Dr. R. A. YOUNG suggested that the problem of influenza must be further dealt with by the bacteriologist, epidemiologist, and the biochemist before the clinician could hope for its solution. In the recent pandemic the theory of infection by contact along trade routes had broken down. The question remained whether influenza was the result of the coöperative effect of a series of different organisms instead of being a clinical unit, since the lesions found were so varied and complicated. The effect of influenza on other latent or quiescent processes was undoubted. The breakdown of old tuberculous lesions often dated from an attack of influenza. Dr. Young agreed with Dr. Phillips as to the deterioration of public health as a whole traceable to the pandemic. As to treatment, he considered the lavish administration of iodides and creosote unkind. For the tracheitis with distressing cough that was so common a symptom he recommended very small doses of morphine and apomorphine. He had found ℥ 5 of T. chloroformi et morphinæ (B.P. 1885), combined with gr. 1/30 to 1/20 of apomorphine, in syrup of Virginian prune, successful in relieving most patients.

Dr. THORESBY JONES spoke of the difficulty of diagnosis, since by the patient every febrile attack was attributed to influenza. He dealt on the importance of good nursing and the difficulty of obtaining sufficient nurses during an epidemic. Delirium had in his experience been a marked feature in the recent outbreak, especially in old people, and occasionally progressed into a maniacal condition. In this connexion Dr. Jones deplored the unfortunate necessity of sending such patients into the observation ward of a Poor-law infirmary. It was not seemly that an old man should be hurried away from his home and find himself in a ward perhaps between a maniacal lunatic and a patient with acute delirium tremens, merely because he happened to be suffering from a sequela of influenza and there was no one to look after him at home. Some more humane way of dealing with these cases should be made available to practitioners. As to the preventive side of influenza, Dr. Jones felt that help must be sought from the bacteriologists.

Dr. G. E. BEAUMONT had examined the urine in 200 cases of influenza. Red blood corpuscles were found in the urine in 30 per cent. of the mild cases and in 45 per cent. of the severe cases. This renal hæmorrhage was indicative of a septicæmic disease. Dr. Beaumont showed four types of temperature charts: (*a*) three-day fever, with secondary rise on fifth and sixth day; (*b*) fall by crisis with or without broncho-pneumonia apart from specific treatment; (*c*) fall by lysis; (*d*) prolonged secondary rise in temperature apart from broncho-pneumonia. In his experience fatal cases were those with subnormal temperature or with rising temperature. Blood-pressure observations showed that influenza was a low blood-pressure disease. Blood pressure was not affected by crisis, but a rising blood pressure was found in toxæmic and fatal cases. The sputum might be salivary, frothy, and blood flecked, or, more typically, mucinous and tenacious, stained brown. It might also be purulent, but Dr. Beaumont had not seen the large quantities of pus described by other observers. As to prognosis, this was improved by early bed treatment; profuse sweating was a good sign. Bad signs were early cyanosis and prolonged high temperature. No patient in Dr. Beaumont's series lived with a temperature persistently over 101° F. for ten days; no patient lived whose pulse reached 150 or respirations 50.

The Bacteriological Aspect.

Dr. JOHN FREEMAN suggested that influenza still had a different significance in the mouths of different people. This increased the difficulties of the bacteriologist, for it was impossible to fit a microbe to a disease which was not a recognisable clinical entity. Any bout of fever was liable to be labelled influenza by the patient, and consequently by the practitioner, who lost prestige if he did not name the disease within 10 minutes of his arrival. The lay press had an undue and improper influence on diagnosis during minor epidemics, and medical statistics were hopelessly complicated if not vitiated thereby. Dr. Freeman asked what criteria were used to determine whether a given set of symptoms—cough, pyrexia, &c.—were attributable to influenza? The typho-malaria of old times probably consisted of cases of typhoid, typhus, and Malta fever, all lumped together as one clinical entity. It was possible that influenza would also prove to be a collection of diseases of different ætiology. Meanwhile the bacteriology remained doubtful, though on the whole Pfeiffer's bacillus still held the field. Incidentally, Dr. Freeman said, this bacillus had had an unfortunate history, having narrowly escaped an initial publicity as the cause of measles, but was finally launched in connexion with influenza. Similarly the pneumococcus had been first considered by Pasteur the causal factor of rabies. Before the war it was customary to say that a pandemic was needed to clear up the ætiology since reports were so varying, but even this had failed finally to solve the problem. The percentage of cases in which Pfeiffer's bacillus was found varied with different observers from 2 or 3 per cent. to over 90 per cent., and probably varied to some extent at least with the skill of the bacteriologist. In competent hands 90 per cent. was a common figure. Certainly Pfeiffer's bacillus, if not actually the cause of influenza, was a very constant secondary infective agent. The actual damage to the tissues was certainly done by the pneumococcus, streptococcus, and *B. influenzæ*, and this fact was the sole justification—and a sound one—for therapeutic inoculation.

A Specific Remedy?

Mr. E. B. TURNER agreed with Dr. Phillips that the diseases of 1889 and 1918 were clinically the same, though in the former epidemic the nervous symptoms were more prominent and in the latter the respiratory. Mr. Turner had himself suffered from the disease in 1889, rapidly developing a temperature of 104° F. He treated himself with 40 gr. salicin, followed by 20 gr. every hour for 12 hours, when he was cured and enabled to resume his work. Since then he had treated every case of real influenza by 20 gr. salicin every hour for 12 hours, and every second hour for another six hours. He had not lost a case nor had his

patients developed complications, and he strongly urged his colleagues to give this method a trial.

Dr. R. DUDFIELD could throw no light on an influenza epidemic from the administrative point of view since he had been doing clinical work in 1889 and had been in the War Office in 1918: but from the point of view of a patient he had noticed profuse sweating as the most prominent symptom. Since there was no compulsory notification of uncomplicated influenza it was difficult to estimate the proportion of cases in which pneumonia set in. The real difficulty was the provision of nurses, and he suggested the enrolment of a flying column of trained nurses willing to undertake emergency work. Dr. Dudfield commented on the small influence exerted by overcrowding—influenza was no more widespread in tenements than in spacious houses.

Dr. MONTAGUE SMITH spoke of the danger of an attack to a pregnant woman. In his experience prophylactic inoculation appeared to have been of benefit. Jaundice was often the only complication of influenza, especially in this year's epidemic.

The PRESIDENT remarked on the rapidity of spread of the disease in 1918—exemplified in Northern Persia where it spread from Baghdad to the Caspian Sea within a week. He also referred to the facility with which influenza appeared to bring out latent disease. In Persia nearly all troops were malarious. A series of cases of high temperature and jaundice had occurred there and Sir William Willcox had been sent to investigate these as possible cases of Weil's disease, but they proved to be cases in which influenza had roused latent malignant malaria. Quinine administered orally had proved useless, but intramuscularly or intravenously it had been useful.

Dr. PHILLIPS briefly replied.

MIDLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

A MEETING of this Society was held at the King Edward VII. Hospital, Cardiff, on April 6th, Prof. EWEN MACLEAN, the President, being in the chair.

The PRESIDENT read a short communication on

Chorea Gravidarum.

He described three cases which conformed to the type of ordinary, or Sydenham's, chorea as distinguished from the far more grave Huntingdon's chorea.

CASE 1.—Age 26, III.-gravida. History of rheumatism; two previous miscarriages. Six months pregnant when seen and had been having choreic convulsions for two months. With rest, isolation, and occasional dose of chloral and bromide condition rapidly cleared up. Normal delivery at term. Urine normal.

CASE 2.—Age 24, primigravida. Two months pregnant. Chorea 18 months previously, acute rheumatism 12 months previously, and chorea for past two weeks, the condition becoming worse in spite of treatment. Pregnancy terminated. Rapid improvement and cure followed. Urine normal throughout.

CASE 3.—Age 22, primigravida. History of chorea on and off for four years. Seven months pregnant. Under treatment: complete rest and silence. Pot. brom. and arsenic, choreic symptoms improved; patient awaiting onset of labour.

Prof. Maclean said that as regards ætiology, it was generally held that these cases were a form of true chorea, and not a manifestation of toxæmia. This view was supported by the frequency of a rheumatic history, evidence of endocarditis in a large proportion of cases, and the detailed resemblance to Sydenham's chorea, whilst in most cases other evidences of toxæmia, such as albuminuria and severe vomiting were absent. The incidence of the disease was commonest in primigravidæ, though it might recur in subsequent pregnancies, and the onset was more frequent in the earlier months of pregnancy. Milder types tended to recover under treatment, rarely, if ever, developed mental symptoms, and only exceptionally miscarried. The severe types were frequently associated with abortion, and were held to be responsible for a maternal mortality of 20–30 per cent. As regards treatment, mild cases responded to rest and dieting associated with arsenic or bromide as the symptoms indicated. In severe cases the prognosis, immediate and remote, was bad; treatment, as a rule, was ineffective, and the induction of abortion or premature labour, before the signs of exhaustion became established, appeared to be the best line of treatment to adopt.

Exhibition of Cases and Specimens.

Dr. B. K. TENISON COLLINS showed the following specimens: 1. Uterus and both appendages removed from a nullipara aged 25 for menorrhagia. The uterus was enlarged by multiple fibroids, some of which were so soft that they were thought to be sarcomatous. The pathological report stated that only fibrous tissue was present. 2. A large ovarian tumour removed from a patient of 55 which had caused menorrhagia. The tumour, which was partially cystic, contained large areas of fatty appearance. No pathological report was yet available. 3. A bone stillette, which, when passed by a woman to procure abortion had disappeared inside her. After location by X ray it was removed from the pelvis, there being no signs of local inflammation, and no wound of entrance discernible. 4. A large vesical calculus removed by vaginal cystotomy. In spite of the presence of cystitis, the wound healed by first intention. 5. A specimen of fibromyoma complicating pregnancy.

Dr. C. E. PURSLOW showed a specimen of fœtus compressus. The specimen had been expelled early in labour, and was followed in due course by a full-term female child. There was a single placenta, the condition being one of homonymous twins.

Dr. D. C. RAYNER reported a case of rupture of the uterus during natural delivery. The patient, aged 25, had had two previous normal deliveries. The pelvis was normal. She had been in labour two hours when a sudden strong pain expelled the child, which was dead, with a loop of cord twisted tightly round its neck. The uterus was firmly retracted when the patient was left. An hour later she collapsed and had all the signs of internal hæmorrhage with shifting dullness in the flanks, the uterus being still firmly retracted. Laparotomy was performed. There was free blood in the peritoneum and a three-inch tear in the uterus with laceration of the right uterine artery. The lesions were dealt with and the patient made a good recovery. Dr. Rayner suggested that the cause of rupture in a healthy uterus like this might be violent movements of the child after the birth of the head, and thought that some of the cases diagnosed as post-partum shock might in reality be mino degrees of ruptured uterus.

Dr. G. I. STRACHAN showed a specimen of anencephaly, in which the placenta was attached to the base of the skull by a thick firm amniotic band, and a small placenta succenturiata was actually adherent to the skull. There was evidence of other adhesions in the stunted growth of the hand. Dr. Strachan pointed out the significance of these obvious adhesions in view of the theory that amniotic adhesions during the early weeks of gestation cramped the growth of the cerebrum, with the ultimate result that the bones of the cranium did not develop, and anencephaly resulted.

Dr. STRACHAN also showed a specimen demonstrating placental apoplexy. It consisted of the uterus and placenta of a woman admitted in the last stages of eclampsia, who died undelivered. There was extensive retro-placental hæmorrhage with obvious hæmorrhage into the placental tissue, and a microscopic slide showed hæmorrhagic infiltration of the myometrium. Retro-placental hæmorrhage might cause death by excessive loss of blood, or, he said, lead to congestion in the separated portion of the placenta, and then to intra-placental hæmorrhage. From this necrotic area of placenta, toxæmia, leading up to eclampsia, might develop.

HOSPITAL FOR SICK CHILDREN.—A sale in support of a fund for furnishing the Nurse's Home will be held in No. 44, Great Ormond-street, London, W.C., on Monday, May 8th.

Reviews and Notices of Books.

ELECTROTHERAPY.

The Principles of Electrotherapy and their Practical Application. By W. J. TURRELL, M.A., M.D., B.Ch. Oxon., D.M.R. & E. Cantab., Physician in charge of the Physiotherapy Department of the Radcliffe Infirmary, Oxford. Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton. 1922. Pp. 276. 12*s.* 6*d.*

THE object of this book is to explain the therapeutic action of electricity upon rational grounds and upon physiological principles, and to describe its application in the treatment of various diseases. In the first part of the book the methods of action of the constant current, of interrupted currents of low and high frequency, and of currents derived from the static machine are considered. Dr. Turrell gives the prevalent views on the action of the constant current on the tissues, and indicates what he considers to be objections to the adoption of some of them. In their place he proposes other explanations and supports these by argument and experiment. In the second part of the book the therapeutic action of radiant energy is discussed. Dr. Turrell concludes that ultra-violet and X rays split up the extremely radio-sensitive chromatin of the nuclei of the tissue cells, with the formation of a toxin or ferment which exercises either a stimulating, inhibitory, or destructive action, in proportion to the dosage.

The third part of the book deals with the testing of the reactions of muscle and nerve. Recent methods in which condensers are used and those in which the chronaxie is determined are discussed, but the author maintains that the original is still the most useful, condensers not having furnished information of practical importance, while the determination of the chronaxie is a slow and elaborate process suitable only for the laboratory. The fourth part of the book is an exposition of the therapeutic uses of electricity. The different systems of the body are considered in separate chapters, and the author states the diseases for which electricity and radiant energy are useful and effective forms of treatment. A brief final chapter deals with the uses of electricity for the destruction of abnormal tissue.

In his descriptions of the forms of electrical treatment for different diseases and his assessment of the value of such treatment, Dr. Turrell is guided mainly by his own experience. The fact that he was formerly engaged in general practice has enabled him to judge without bias the value of electrical treatment, and to establish its position on a still firmer foundation. He tells us that it was the success which he obtained in the treatment of endometritis by the galvanic current after failure of other methods that first convinced him of the great value of electricity as a curative agent. He has found this current far superior to the curette and the douche in certain diseases of the uterus, while for sprains and traumatic synovitis occurring among university athletes, the results obtained from electrical treatment are in his experience better and sooner achieved than those obtained by other methods.

Dr. Turrell's conclusions regarding the mode of action of electric currents in treatment are unorthodox. For example, he maintains that the action of the constant current in treating infective endometritis, by way of a zinc sound introduced into the cavity of the uterus, is due to the formation of oxychloride of zinc. The theory of the migration of ions is discarded, and it is stated that "while a salt is in an ionic state, its chemical affinity is temporarily inhibited by its electrical charge, therefore as an ion it can have no therapeutic action." Apart from the effects which it produces at the poles, the action of the constant current is, according to Dr. Turrell, due solely to the heat which it generates in the tissues. In support of this hypothesis he has performed experiments in which the current has been passed along the lower limb. A surface thermometer attached to the latter shows a rise of temperature, but not above 92° F., and the possibility that this rise was due to vaso-dilatation is not excluded.

Dr. Turrell states that burning and incineration of the tissues by heated irons and Paquelin's cauteries have been "rightly relegated to the surgical barbarities of the past," largely as the result of the danger of primary or secondary hæmorrhage. His statement that when diathermy is used for cauterisation there is complete absence of all hæmorrhage at the operation, and subsequently no danger of secondary hæmorrhage, leads us to conclude that he has been exceptionally fortunate in his experience. The danger of secondary hæmorrhage is a very real one; death has been attributable to this cause in one case at least, quoted by Dr. E. P. Cumberbatch in his book on Diathermy (Heinemann).

Certain other statements require modification. Hydroxyl (OH) is termed an acid radical (p. 5). Platinum is described (p. 24) as a non-polarisable electrode. In speaking of the treatment of infective endometritis by the constant current (p. 25) it is said that the "nascent oxychloride of zinc pervades the whole surface of the mucous membrane, permeating to every crypt and follicle. . . ." The oxychloride of zinc would surely cease to be in the nascent state long before it had permeated into every crypt and follicle. On p. 47 it is stated that the time occupied in the discharge of a condenser is proportional to the *voltage* with which it is charged. On p. 13 Privati should be spelt Pivati, and on p. 56 (line 22) "fell" should be "rose."

In spite of some inaccuracies, Dr. Turrell's book is valuable as well as attractive. It is not for the beginner, but the advanced worker in electrotherapy will read it with appreciation, and although he will doubtless disagree with some of the teaching contained therein, the book may well stimulate such discussion and inquiry as should lead to further knowledge.

Leitfaden der Elektromedizin. For Physicians and Electro-technicians. By Dr. Med. LAQUEUR, Dr. Phil. OTTO MULLER, and Dr. Phil. Nat. WILHELM NIXDORF. Halle an der Salle: Carl Marhold. 1922. With 133 illustrations. Pp. 241. M.34.

THIS work begins with a brief introduction to the physics of the subject and an explanation of the meaning of electrical terms; the rest of the book deals with the medical uses of electricity. The *direct* applications of electricity are first considered, that is, those in which the current is passed through the body by way of electrodes placed in direct contact with the surface. The galvanic current, its derivation from various sources, its properties, its medical uses are described, and its mode of action in the treatment of disease is discussed. A brief account is given of its uses for the introduction of ions and for the destruction of morbid tissue. The properties and uses of the faradic current are described in detail. A short account is given of the sinusoidal current, and some notes on the pulsating current, the intermittent current obtained by means of Leduc's interrupter, and the currents obtained from the discharge of condensers. A section is devoted to electric baths, but the important subject of reaction testing is condensed into four pages.

The so-called indirect uses of electricity are next discussed, and about 50 pages are allotted to the various forms of radiant heat and ultra-violet apparatus, with their medical uses. The third part of the book deals with high-potential electricity as obtained from the static machine and high-frequency apparatus. Static electrical treatment receives scanty attention. The high-frequency apparatus of the type introduced by d'Arsonval is described in detail and the current which it gives is recommended for the treatment of high blood pressure and insomnia, and, when applied by means of the condenser electrodes, for neuritis and neuralgia. Sustained high-frequency

currents capable of producing diathermy are recommended for arthritis due to gout, gonorrhœa, influenza, and dysentery, for neuralgia and neuritis, for trauma and frost-bite, for arterio-sclerosis and angina pectoris, for cholecystitis, post-operative adhesions, and various inflammatory troubles of the female pelvic organs. The operator is warned of the risk of applying diathermy in cases of recent hæmorrhage and acute inflammation accompanied by pus formation. The construction of the diathermy apparatus and the properties of the current are fully described. Three short appendices conclude the book. One deals with the resistance of the body to the electric current, the second with the dangers associated with the use of electric currents, the third with the electrical changes accompanying the heart's action and the electrocardiograph.

The authors maintain that the physiological and therapeutic action of the galvanic current originates, in the first place, in the alteration which it produces in the concentration of the tissue ions. Accompanying this alteration is the production of anelectrotonus and katelectrotonus and the modification of the excitability and conductivity of the excitable tissues. The power of the current to introduce ions into the tissues is admitted, but the authors believe that treatment by this method must be reserved for diseases of the skin and mucous membranes. The English reader will be interested in the warning that the sinusoidal current applied in baths may cause death. This dire result, which has occurred in Germany, was evidently not due to earth shock and short circuiting. The accident was reported in some cases of hysteria following on the war, and a few were the subjects of status lymphaticus. Instructions are given regarding the precautions that must be observed when this current is used. It must never exceed 20 milliampères in strength, and it should not be applied in such a way as to concentrate its action on the chest. In describing the migration of ions, it is said that the ions composed of acid radicals move to the anode. This is correct, but not the inclusion of carbolic acid as an example. This substance is not an acid, nor does it dissociate into ions.

The book is of more interest as a theoretical than as a practical exposition of medical electricity.

NEUROLOGIE.

In Two Volumes (being Vols. V. and VI. of the Traité de Pathologie médicale et de Thérapeutique appliquée, published under the Direction of MM. EMILE SERGENT, L. RIBADEAU-DUMAS, and L. BABONNEIX). By Various Contributors. Paris: A. Maloine et Fils. 1921. Vol. V., pp. 561, Fr.30. Vol. VI., pp. 704, Fr.35.

THE appearance of a modern treatise on neurology in a convenient and handy size, well printed and well illustrated, written by the most eminent neurologists of the French school—among whom may be mentioned Madame Dejerine, Prof. Pierre Marie, and MM. André Thomas, Souques, Sicard, Laignel-Lavastine, Roussy, Lhermitte, and Crouzon—is very welcome. The two volumes form part of a system of medicine which is concerned rather with the practical than with the theoretical side, and they are conceived on a somewhat smaller scale than that of some other well-known systems. Some of the articles, indeed, are scarcely commensurate with the importance of their subject; 36 pages are devoted to vertigo, but only three to varieties of spasm. The work is much stronger on the organic than on the functional side; neurasthenia is not, apparently, dealt with, and many of the psychoneurotic states are ignored. There is no appropriate description of the occupation neuroses, "professional cramps" being dismissed in a few lines under the heading of hysteria. This incomplete handling of an aspect of neurology as important as the organic, and at least as amenable to treatment, is to be regretted; from a perusal of the pages allotted to functional disease the reader would not realise the prominence that division of neurology enjoys in these days. The section on hysteria, which is really the solitary contribution on the functional side, follows Babinski's doctrines to a large extent, as might perhaps be expected; it is descriptive rather than analytic, and, as far as we have noted, Freud's name is not so much as mentioned therein. Whatever view be adopted of the nature of hysteria no presentation of the subject can be adequate which ignores the work of that investigator.

In alluding to the poverty of this treatise as regards the neuroses and psychoneuroses we do not desire to minimise its many excellences; it contains a particularly well-written account of organic neurology, in which the various acquisitions to knowledge gained by the experiences of the war are duly incorporated, and from which the reader can derive full information from the standpoints of clinical practice, of diagnosis, and of therapeutics.

TECHNIQUE OF PSYCHO-ANALYSIS.

By DAVID FORSYTH, M.D., D.Sc. Lond., F.R.C.P. Lond., Physician, Charing Cross Hospital; Senior Physician, Evelina Hospital for Children. London: Kegan Paul. 1922. Pp. 133. 5s.

Dr. Forsyth confines himself closely to his subject, and writes with a simplicity which is almost homely. He does not explain psycho-analytical theory, but describes the handling of the patient and the attitude that the analyst must adopt in face of the difficulties that he will surely meet. His remark concerning the first interview that "it may be enough if you do nothing more than . . . abstain from arousing any active opposition," suggests the pitfalls that surround the work. One realises that for it a capacity for patience and tolerance is a first necessity, and that this must be based upon self-knowledge, for which self-control is a poor substitute. Dr. Forsyth thinks this knowledge is best obtained by a preliminary analysis of the would-be analyst, which has the additional advantage of teaching the necessary technique. The greater part of the book is devoted to a study of the transference, and the beginner is warned of the risk of the patient breaking off analysis at a stage of negative transference and spreading an unduly bad report of the analyst; this risk is, the writer says, inseparable from the work. He shows how the transference is used as a means of discovering the origin of the feelings involved, and thus advancing the analysis.

The book is based almost entirely upon Dr. Forsyth's own experience, and is written with modesty and a frankness which makes the reader feel that he is in personal contact with the author. Although it is written for the aspiring analyst, yet to the practitioner who wishes to know what kind of thing psychoanalysis is the book will give a better insight than more theoretical works.

THE MECHANISM OF LIFE IN RELATION TO MODERN PHYSICAL THEORY.

By JAMES JOHNSTONE, D.Sc., Professor of Oceanography in the University of Liverpool. London: Arnold and Co. 1921. Pp. 248. 15s.

ANTICIPATING that the title may be misleading to some readers, the author explains that by "the mechanism of life" is meant nothing more than the results of the scientific analysis of the activities of living animals. A short chapter on the nature of animal life deals with structure and function, integration, incoördination, and coördination of activities in organisms, and gives a comparison of the organism and the State. As Prof. Johnstone remarks, we might spend a lifetime in studying the anatomy of animals, and yet never have studied the animal at all. It is only when we look at the things that organisms do that we are students of life.

This book is intended for general students of social science as well as for those who seek culture, and for this reason the comparison between the organism and the state is introduced. The sensori-motor system is clearly set out, and then follows a chapter on the principles of energy. In the account of the sources of energy and vital production in animals or the

"animate machine," digestion and metabolism are briefly described. In a section on brain and nerve, the means by which various activities of the animal body are linked together and coördinated are explained. We may point out that in a discussion of the nervous control of the heart beat, the respective functions of the vagi and the sympathetic nerves are reversed. Special nervous mechanisms—those of sensation, of motor control, and of coördination—are next considered, including a general account of the organs of sense and their mode of functioning and of the whole complicated system of reflex action, cortical control, and cerebral localisation. In the analysis of behaviour, tropisms, taxis, reflexes, brain activities, and inhibition are dealt with. Behaviour is regarded as the functioning of the sensori-motor system which is based upon experience—i.e., on individual requirements and not something that is inherited. The "mechanistic" or "materialistic" view of the living organism is then passed in review, including an interesting account of the views of Descartes.

So far the author has given a summary of the main results of physiology—a summary which he states is obviously bare, but is so designed that the reader should have little difficulty in amplifying his knowledge by the study of any good modern text-book should he so desire. Prof. Johnstone then passes on to more recondite questions, such as the meaning and kinds of perception, the nature of sensation, the objective and subjective, the problem of free will, and the views of Bergson, memory and habit, space and time, and the "Kantian categories," winding up with a chapter on the nature of life. Here he discusses the application of the laws of thermodynamics, the condition of the universe, whether it is finite or infinite in space and duration, entropy, and the disentropic phases of the universe; and eventually he is brought to the conclusion that the concept—"the entropy of the universe tends towards a maximum value"—by which we explain inorganic happening, fails to explain organic happening truly, for in the latter the inorganic concept is reversed.

THE price of "The Mayo Foundation Theses" (Messrs. W. B. Saunders Company) reviewed in THE LANCET of last week is 50*s*., and not 30*s*. as stated.

JOURNALS.

BRITISH JOURNAL OF CHILDREN'S DISEASES. Edited by J. D. ROLLESTON, M.D. Vol. XIX., January–March. In a post-graduate lecture on Symptoms and Signs in Chronic Heart Disease, Dr. G. A. Sutherland maintains that in the examination of cases of heart disease an attempt should be made to answer the following questions: (1) What are the symptoms complained of, and do they indicate heart disease? (2) What are the objective signs on examination of the heart and circulation? (3) Do the symptoms and signs correspond? (4) If there are no cardiac symptoms, what is the significance and importance of the physical signs? As a general rule the objective signs of disease predominate in childhood, while the symptoms are most prominent in later life. In the estimation of the value of the various cardiac signs Dr. Sutherland considers that many cardiac signs may be estimated lightly owing to their frequency and ascertained insignificance. Thus a systolic murmur at the apex, if unaccompanied by other signs of cardiac change, may be ignored. The sinus irregularity associated with respiration, and an occasional extra-systole, are also unimportant. On the other hand, a persistently rapid cardiac rate (120 to 130), in association with other signs of heart disease, and an aortic diastolic murmur due to aortic regurgitation possess great significance. Dr. Sutherland emphasises the importance of estimating the functional efficacy of the heart by a series of simple exercises before making a prognosis and deciding whether any precautions or treatment may be necessary. Three illustrative cases are recorded in support of these principles.—In a paper on Some Cases of Incontinence of Urine, Mr. A. Ralph Thompson describes the method employed in the treatment of incontinence of urine in his genito-urinary department at Guy's Hospital. The following conditions are first excluded: Gross surgical lesions such as stone in the bladder or urethra or tuberculosis of the urinary tract; nervous lesions such as may be associated with spina bifida; paralytic distension associated with muscular failure of the bladder and incontinence and overflow of urine; and lastly vesico-vaginal fistulæ. When all these surgical conditions have been eliminated the knee-jerks are examined and will usually be found to be increased. The blood pressure is also investigated and may also be raised. Belladonna in the form of 2 minims of the tincture and thyroid in ¼ gr. doses are prescribed either separately or in combination. If no improvement occurs at the end of a fortnight the drugs are continued, but an attempt is made to train the bladder muscle by funnelling in from 6 to 12 oz. of fluid, according to the age of the child, through a moderate-sized catheter, a larger quantity being introduced at the next sitting three days later. Older patients are instructed to stop micturition two or three times during the act so as to put the compressor urethræ and other muscles which control micturition into action. Four cases illustrating this method, which Mr. Thompson has always found successful, are described.—Dr. F. Parkes Weber contributes a paper entitled A Case of Erythrœdema (the Pink Disease), and the Question of Acrodynia (Epidemic Erythema), and a similar case is reported by Dr. Hugh Thursfield in collaboration with Dr. D. H. Paterson under the heading of Dermato-polyneuritis (Acrodynia: Erythrœdema).—Mr. E. E. Hughes, of Manchester, records a Case of Intestinal Obstruction Due to Inspissated Meconium similar to one reported by Ballowa and Brennan in 1919. A diagnosis of intestinal obstruction due to some congenital malformation of the large intestine was made and operation was considered inadvisable. The autopsy showed a large mass of inspissated meconium completely blocking the lumen of the transverse colon. Immediately proximal to the obstruction was a perforated stercoral ulcer through which a quantity of liquid meconium had escaped, producing general peritonitis. There was no congenital malformation of any part of the intestinal tract.

New Inventions.

AN IMPROVED KNEE-SPLINT.

THE appliance here illustrated was devised after many trials and possesses a number of distinct advantages over the ordinary form of elastic knee-splint, readily adapting itself to all shapes and capacities of the joint without loss of efficiency. Chronic simple synovitis that had resisted other modes of treatment has been permanently relieved by its use. After operation the appliance has been found to support and strengthen the surrounding structure, permitting the free use of the limb. Other indications for its use are: Loose or displaced semilunar cartilages, tendency to displacement of the patella, and aftersprains and other injuries to the knee. The splint is made from pure Para rubber, quilted by a special process whereby great elasticity and resilience are obtained. It was found, after many trials, that the depth in front taken in the middle line of the joint should be 1½ in. above the upper border of the patella and 2 in. below the lower border. The depth in the middle line at the back should be one-third of the depth in front. With this appliance neither flexion nor extension is restricted. It can be adapted also for the ankle- or elbow-joint.

The appliance has been made for me by Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, W.

HENRY A. GRAY, M.R.C.S., L.R.C.P. Lond.
232, Vauxhall Bridge-road, S.W.

THE LANCET.

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The Interpretation of Symptoms.

THE Goulstonian Lectures on the Interpretation of Symptoms in Disease of the Central Nervous System, which have been delivered this year by Dr. ANTHONY FEILING and published in our present and last two issues, are calculated, we believe, to appeal to a wider audience than has sometimes been the case with these annual contributions to scientific medicine. An epitome of personal research may be of abiding value but of quite limited interest. The specialist who is officially recognised by such a position as that which Dr. FEILING has held might with greater frequency remind himself that the expert may have to play a dual rôle, and be prepared on occasion to provide the intelligent practitioner with the fruits of experience gathered not only in his own corner of the field but in those cultivated by others. It is well for him sometimes to take stock of the general situation as regards research, and endeavour to gauge the bearing and trend of movements apparently diverse or disconnected; so that we are grateful to Dr. FEILING for the clearness with which he has sketched for us the significance of much recent neurological work, and has indicated how it may be utilised in the furtherance of applied medical knowledge.

That a change has come over the interpretative aspect of nervous symptomatology will scarcely be denied by anyone who has been watching the direction of the current of research. It may be expressed in a single phrase, that neurological symptoms and signs are interpreted in terms of function rather than of structure. Motor, sensory, and reflex phenomena, the everyday stock-in-trade of the neurologist, are not regarded as isolated, separable, and disconnected facts, the outcome of structural "lesions," but rather as the exteriorisation of disordered function. There can be no doubt that in this respect neurology to-day is following in the footsteps of Dr. HUGHLINGS JACKSON, who preached his physiological gospel half a century ago, while there is also considerable activity in applying to clinical study the laboratory findings of a great experimentalist like Prof. SHERRINGTON. It takes time, however, for alterations in conception and interpretation to filter through from their source to the working levels of general practice, and perhaps it is well this should be the case, for some new ideas and discoveries die a natural death before they reach the practitioner, and all have to stand the test of experience. When symptoms and signs are accepted eventually as of diagnostic value, a fixity of meaning and significance is prone to develop in connexion therewith, which in the end defeats its own purpose. As an example, reference may be made to the toe reflex of BABINSKI, the extensor plantar response, with which every student of to-day is familiar and which is still commonly taken to indicate organic disease of the pyramidal tract in its cerebral or spinal course. Practically useful as this view of its meaning has doubtless been, the sign is otherwise regarded by the neurologist, who has observed it to come and go, so to speak, with circumstances in which structural disease of the corticospinal path is definitely excluded, and who knows it cannot be correlated with degree either of spasticity or of paralysis. Instead, therefore, of a morphological symbolism the phenomenon is seen to have a functional symbolism; it is normally in abeyance because higher mechanisms control lower, but when it makes its appearance a corner of the veil is lifted and the observer sees revealed a loss of control at an upper level and a release of function at a lower; and it is immaterial whether the occasion be temporary or likely to persist, whether the "lesion" be structural or nutritional. The diagnostic value of the plantar reflex in extension is not lessened by a change in interpretation; on the contrary, for a physiological explanation to take the place of a stereotyped and inelastic correlation with structural defect is a distinct gain. Many other instances of the physiological method of viewing semiology are furnished by Dr. FEILING, who has amplified the work of others by illustrations from his own experience.

The revaluation of neurological signs is, as it appears to us, but a part of a general move away from mere descriptive morphology to the investigation of physiopathological process. Disease is a process, not a state, and should be imagined in physiological, not in anatomical terms. If the student of neurology is enjoined by his teacher to "think anatomically" this is largely because it is unsatisfactory to postulate function when the means whereby function is rendered possible are neglected; but the case for a physiological interpretation is not thereby weakened. It will ever be a neurological aim to correlate structure and function, since nicety of topographical diagnosis is of paramount importance to the neurological surgeon; the fact remains, nevertheless, that for insight into disease and disease-processes a physiological standard of exegesis is imperative. Hitherto the neuropathologist has been too complacent in his investigation of scar tissue, for that is all his dead material often amounts to. Experimental neuropathology has a very long furrow to plough, the admirable work of ORR and ROWS and of various other investigators notwithstanding. Any line of research, biochemical, chemical, metabolic, embryological, that deals with living matter is preferable to the dead end into which unimaginative morbid anatomy may lead. The treatment of myopathic and myelopathic atrophy is as hopeless to-day as when these conditions were first recognised, yet their pathological anatomy is known to the last muscle-fibre; we are ignorant of their essential nature, and we have scarcely made a beginning with their biochemistry and metabolic problems. This, surely, will be more remunerative than classification and description. In truth, there are few fields that offer a fairer prospect to the student of research than that of neurology in its widest sense, and we may rest assured that the examination of nervous symptoms in terms of physiology—now, as Dr. FEILING has shown us, so much to the fore—will in turn lead to examination of nervous disease in terms of pathological process; once the nature of a process is grasped we shall at least have taken a long step towards its rational cure.

The Practitioner's Holiday.

HOLIDAYS have always been a difficulty with the practitioner, and the more so the more personal his relation with his patients. The biographer of Dr. JOHN FOTHERGILL records that it was unusual in his time for physicians to take long holidays, and that some who did found their practice much diminished on their return. It is hardly to be supposed that nowadays the medical officer of health, the school or the asylum medical officer need find any difficulty in obtaining three or four weeks of change and mental

recreation during the working year. How necessary such a change is hardly needs emphasis. OSLER drew a picture of the family physician so absorbed in work that leisure became unknown. There is danger, he added, in this treadmill life lest the practitioner lose more than health and time and rest—his intellectual independence. FOTHERGILL'S sister wrote of the "perpetual clamour of people wanting him," so that every night he was exhausted to the last grain of ability of body and mind. Hard and quasi-continuous work in itself, it is true, may not shorten the life of the body as a whole any more than it shortens the life of its members, the heart or the kidney, but mental relaxation is particularly necessary for a life in which the powers of observation must continually be upon the alert. Thus, it is the practitioner whose single-handedness makes his work engrossing who feels it the most difficult to forsake it, whereas, with this habit of mind, he is precisely the individual who would find few things on a holiday which are not pleasant to do. But the practitioner may have neither the desire nor the means—for the substitute is increasingly scarce and costly—to put his work in the hands of a properly qualified locum-tenent, and he has lost the liberty of 25 years ago to employ unqualified assistance. Commenting at that time upon the apparent hardship inflicted by the General Medical Council in forbidding the employment of such holiday assistance, we took occasion to remark that the effect of its abolition should be to make members of the medical profession practising in the same place more neighbourly, more helpful to each other, and more trustful. And this is what has been happening.

In the later period of the war when local medical war committees were selecting civil practitioners to the uttermost limit of safety at home, the central committee arranged a scheme for substitute medical work. And it is on the basis of this scheme, which on the whole worked out well, that the London Panel Committee has now drawn up a scheme for mutual assistance during the holiday season as an alternative to the employment of locum-tenents. While the scheme is voluntary, any practitioner who joins it undertakes not to retire without giving three months' notice. Its operation is limited to the months from May to October in each year, and to groups of practitioners residing within reasonable distance of one another, no group to consist of less than five members, who shall appoint one of their number to act as secretary. Each member of a group has to undertake to act for any other member in providing treatment for his patients in his absence; to arrange by mutual agreement the dates of his own holiday, which shall not exceed four weeks; to fill in the forms for panel patients supplied by the committee, and to return them to the committee as soon as possible after expiration of the holiday. Finally, each participant undertakes to pay direct to the practitioner who has been on holiday all fees received in respect of private patients attended on his behalf. The scheme is confined to holidays only, and does not include midwifery, poor-law, vaccination, or insurance examinations. It involves the payment in advance by each practitioner to the secretary of the panel committee of five guineas per week for the first fortnight, and six guineas for any further period of holiday; the fees are then to be pooled and, after deduction of expenses, to be distributed among the members of the group on the following plan: The total number of patients attended by the various members of the group having been ascertained by adding together the number of forms returned to the panel committee, the sum remaining in the pool shall be divided into units representing one unit per patient, and each member of the group shall be paid a sum in direct proportion to the number of forms submitted by him to the committee.

We have set out in detail this scheme for mutual assistance, for it is on practicability in detail that any such scheme will stand or fall. Different arrangements may be required for different parts of the country—urban, rural, residential, industrial—but everywhere it is on the neighbourliness, helpfulness, and trustfulness of individual members of the medical profession that the scheme essentially depends. The scheme may still seem something of an experiment; we believe it is an experiment long overdue and one which might have been tried with a large measure of success many years ago. It may still, in part, be true, as SAMUEL JOHNSON said, that a physician in a great city is the plaything of fortune, his degree of reputation for the most part casual; "they that employ him know not his excellence; they that reject him know not his deficiencies." To what extent professional jealousy has accentuated this difficulty in the past will be a matter of discussion, but it is clear that the basis of coöperative holiday-making will have to be unselfishness. The London Panel Committee's scheme will ensure for the practitioner on holiday not merely a suspension of the strain of professional life, but a period unimpaired by anxiety in regard to his livelihood.

New Avenues in Immunisation.

THE first of the special weekly lectures on pathological research in its relation to medicine, arranged for the summer session in the Institute of Pathology and Research, St. Mary's Hospital, was delivered on April 27th by Sir ALMROTH WRIGHT, who took as his subject New Avenues in Immunisation. The lecturer gave a brief sketch of the origin and growth of the doctrine of immunity and explained how the discovery that protection could be produced by the inoculation of killed microbes or vaccines, combined with the elaboration of methods for measuring the amounts of immune bodies in the circulating blood, had opened the way for the practice of therapeutic immunisation. It is common knowledge that though this method of treatment has been brilliantly successful in many directions, in others it has been disappointing, and this is particularly so in cases of septicæmia. His experiences during the war have led Sir ALMROTH WRIGHT along new lines of research and have opened up new avenues of thought. Adopting his "method of after-washes[1]" for the measurement of the bactericidal power of the blood, he has discovered that the intravenous injection of a vaccine is immediately followed by the appearance of bactericidal substances in the blood, which are not specific but can act upon various types of organisms. This in no way negatives the doctrine of specific immunity; for the late result of an inoculation with, say, a typhoid vaccine, is the production of antibodies which are specific for the typhoid bacillus, but the immediate result of such an inoculation is the appearance of non-specific antibodies. Inasmuch as leucocytes possess the power of inhibiting the growth of organisms on culture media, it seems likely that these non-specific substances exist ready formed in the leucocytes which yield them in response to the immediate demand. The immunity response is thus dependent upon two factors, the activity of the leucocytes and the development of specific antibodies in the serum. Estimating these two factors separately, it has been found that in many of the cases which

[1] THE LANCET, 1918, i., 831.

have failed to respond to vaccine treatment the fault has been in the leucocytes. Sir ALMROTH WRIGHT has therefore devised the method of immuno-transfusion; this consists in the transfusion of blood which is treated after collection from the donor with the appropriate vaccine. The methods adopted for determining the optimum amount of vaccine to be employed in this procedure were detailed, and the laboratory tests by which benefit to the patient can be demonstrated described. Finally the lecturer referred to three cases of apparently hopeless streptococcal septicæmia which he had recently treated by this method with complete success. The investigations upon which Sir ALMROTH WRIGHT has been engaged since the war are of the greatest interest; they suggest entirely new conceptions of immunity to bacterial disease, and give every promise of providing means of coping with certain acute infections which have so far defied all methods of treatment.

Mosquitoes in May.

May Day broke in wintry bleakness, but, in accordance with immemorial custom, all the daily newspapers recorded sights and sounds which show that "the slayer of the winter" has won his annual victory. As is usual, too, most of the signs selected for comment were such as would be seen and heard by the "everyday young man, with a stick and a pipe," and whatever dog has taken the favoured place of the "half-bred black and tan." But there are other signs of equal or greater interest. One of them can be seen and studied during a walk on any of the commons round London. As a result of much recent rain, most of the public pathways over these commons are fringed with shallow pools, and the sign of coming summer to which we refer is that nearly all these pools are now teeming with mosquito larvæ. They can be detected by the quick change of glistening colour that passes over the water when, frightened by a shadow, all of them simultaneously quit the surface film and dive to the bottom. A few days ago many of the larvæ pupated, and given a day or two of bright sunshine, the countryside will soon be alive with the adult insects. Already at places further south, as in Hampshire, the adult insects of this season's first brood have begun to emerge, though as yet not in numbers sufficient to be troublesome. It is important to note that the several species concerned at present are not those which can transmit malaria: on the commons round London they are chiefly *Culex nemorosus* and on the sea-coast marshes of Hampshire they are chiefly *Culex detritus*. The latter inflicts a painful bite, but has not been convicted of conveying any specific disease. The present abundance of larvæ is surprising in view of our knowledge that last year the dryness in the home counties was wholly without precedent, and that all the ground, which is now waterlogged and swarming with aquatic insect life, was dry and hard during several months of autumn and winter. Knowing, too, that as regards the particular species of mosquito concerned all the adult insects die at the onset of winter, we must assume that last autumn their eggs were laid on the dry ground, where they remained, resistant to cold and drought, until the rains of the present spring covered them and provided the necessary factors for further development. The larvæ which are now so plentiful bear witness to a remarkable capacity for adaptation to adverse conditions, and knowledge of their life-history explains one of the methods by which they do so. Other species use other methods,[1] and the complete story of the tribe in England, which has been for some time one of the subjects of epidemiological inquiry undertaken by the Ministry of Health, shows clearly that in this country, as in the tropics, the subjugation of mosquitoes cannot be accomplished without intensive studies in the broad field of biological research.

[1] See for example a paper by Colonel S. P. James in the "Bulletin of Entomological Research," vol. xii., part 4, February, 1922, p. 427.

Annotations.

"Ne quid nimis."

STANDARDISING PUBLIC HEALTH WORK.

IN the world of machinery, as is well known, the United States is the leader in the standardisation of methods and of manufactures; and the practical advantages of interchangeability of parts and the resultant ease of repair in case of damage are very great. The idea of standardisation has spread to other departments of life, and though it has obvious advantages it is not entirely free from drawbacks, the greatest of which is the possibility that men may become standardised into machines. Much of the best work in life is incapable of numerical statement, and numerical comparisons of results not infrequently lose in their compilation the imponderable but nevertheless supremely important element of personal influence and character. But, given judgment in measurement, the advantages of standardisation outweigh its drawbacks, and this is particularly so when we are concerned with the measurement of public health work.

In statistical measurement there is nothing novel in the idea of standardisation. For a long series of years the minimum statistical tables which every medical officer of health is required to give in his annual report have been definitely stated by the Central Authority. Some compunction in this respect is evidenced by the statement in the recent circular of the Ministry of Health that full tabular statements in future will only be required in quinquennial reports, a wise relaxation in view of the fact that the Registrar-General gives annually most of the desired statistical information. But in methods of sanitary administration hitherto but little attempt has been made to issue comparative statements of practice in order that those health officers wishing to model their departments on predominant practice may have convenient information at their disposal. In one department of public health work, that of maternity and child welfare, the Children's Bureau of the American Federal Government last year issued a valuable statement of standards of work, which may be treated as an ideal towards which to reach. It may be that a report now being issued in instalments will fulfil the same purposes for public health administration generally, so far as America is concerned, and will prove useful for English administrators. This is the report of a Committee on Municipal Health Department practice prepared by a Committee of the American Public Health Association. The constitution of the Committee gives confidence in the value of its report, and when published in full it should give valuable indications for practice. The difference between America and this country is exemplified in the origin of this report. It has been prepared by a voluntary body, the American Public Health Association, and it is financed by a public-spirited private insurance company—the Metropolitan Life Insurance Company.

The inquiry has been limited to cities of 100,000 population or over, and quite rightly the Committee have not been contented to send their elaborate questionnaire by post, tabulating answers which have a very varying degree of accuracy, but have secured uniformity and completeness of returns by the visit of a personal representative of the Committee to each city. As an example we may allude to one item of practice in the present note—viz., the extent to which routine gaseous disinfection is employed in 82 cities. It is practised for small-pox in 68, for scarlet fever in 66, for diphtheria in 63, for measles in 4, and for tuberculosis in 42 per cent. of these cities. The influence, if any, of terminal disinfection in the prevention of any of these diseases, excepting small-pox, needs further investigation. For scarlet fever and diphtheria it is being increasingly abandoned, apparently without increase in the recurrence of disease. The ideal, of course, is disinfection of

secretions and excretions promptly during the patient's illness; when this is done, whether, apart from rigid cleansing of premises, terminal disinfection is useful may be regarded as open to dispute.

IODIDE IN INFLUENZA.

SPECIFIC drugs were admittedly disappointing in severe influenza cases during the epidemic of 1917–18. Amongst others, Sir Thomas Horder recorded that the popular creosote and iodide mixture did not seem to justify its vogue, and Dr. R. A. Young (see p. 898) considers this treatment even unkind. Yet iodine in one form or another continues to receive favourable notice in influenza. Administered intravenously it was tried in the military hospital at Warlingham for toxæmic and pneumonic cases, with encouraging results. A recent advocate is Dr. August Gause (Frankfort o.M.) in the current number of *Moderne Medizin*, who describes the treatment of influenza with iodide as "new." The concurrence of double pneumonia with influenza in the recent epidemic has, Dr. Gause tells us, nearly always led to a fatal ending. In all cases of influenza, whether accompanied by fever or not, his practice has been to prescribe at the very beginning iodide of potassium in 5 per cent. solution, the dose for adults being one tablespoonful in a plate of soup or broth at the midday and the evening meal, and for children one teaspoonful taken in the same manner. Treated in this way afebrile cases were well in a few days, while febrile cases with serious complications took a favourable course. Antipyretic drugs, such as aspirin or phenacetin, could be dispensed with, and the weak and frequent pulse improved without injection of camphor or digitalis. Under this treatment, Dr. Gause had no fatal case of double pneumonia to record. The iodide thus administered called forth no unpleasant secondary symptoms, as vomiting, faucial irritation, or exanthem. The treatment was not materially assisted by strengthening diet; economic conditions prevented that in most cases. For the cough 15 drops of 2 per cent. codein were given if necessary thrice a day. Whether or no the beneficial therapeutic effect of iodide of potassium in influenza can fairly be ascribed to its electrolytic action in the blood, as Dr. Gause suggests, this use of the drug deserves further study.

NUTRITION IN VIENNA.

DURING the past year we have twice published papers written by Miss Madge R. Gribbon, M.A., in association with Prof. Noël Paton, F.R.S., dealing with the conditions of life of the working and middle classes of the Viennese population, and of the neighbouring rural communities.[1] Miss Gribbon has now completed a survey of 3000 of the most marked cases of malnutrition among Viennese children, made between July 1st and Sept. 31st, 1921, and her findings were, briefly, as follows: Since the Friends' Relief Mission had fed the children of Vienna—i.e., from 1919—over 72,000 had been dealt with. These children were under medical surveillance, and, for purposes of administration, were classified in four groups: Group O, normal children in good health who had never received the ration; group A, "gesund," those in fair health, showing no active disease and no longer receiving the ration; group B, "schlecht," those in bad condition, still receiving the ration; and group C, "sehr schlecht," those receiving the ration, and in the worst condition. The groups were revised every two months; after July 1st, 1921, there remained in group C a large number, 3000 of whom formed the material for this survey. As controls 300 children of group A were also examined. The investigation was conducted by trained workers, who visited the homes of the children throughout the city and collected information according to a schedule. As regards nutrition, the weight standard for Viennese children, as used at the Pirquet clinic, was taken as normal; the group A children averaged 1·5 kg., and the group C children 2·3 kg., less than normal. The A class were probably still suffering from the effects of prolonged malnutrition, but their general health was markedly superior to that of the C class. Manifest disease was reported in 48 per cent. of group A children, and in 90 per cent. of group C children; of the latter percentage nearly a quarter were tuberculous, and more than a third rachitic. The influence of the size of the family and of the numerical position of the child was also considered; in the group A there were no families with more than four living children, whilst in group C the numbers of children in one family went up to 18. The position of the group C child was generally found to be amongst the last three of a family. As regards personal care, the mother was usually clean, and contrasted favourably with the slatternly woman so often seen in the slums of our large towns. Moreover, "in Vienna nothing like the filth and squalor which exists in the slums in this country (Scotland) is to be seen." Classification of mothers and houses into good, fair, and bad showed no distinct difference reflected in the children. No relation, moreover, could be established between the condition of children and the air-space per person, but an interesting general impression of housing conditions emerges. "In the houses in Vienna," we learn, "the average air-space per person is generally greater than in the . . . . houses of the poorer classes of our industrial towns." The approaches to the rooms are consideraby better, more airy, and on the whole cleaner than in the corresponding British dwellings; the town is not so congested, there being many open spaces where the poorer classes take the air and the children play. With reference to the income of the family, this naturally had little relation to the nutrition of the children; the average income of families of group A children was always better than that of the families of group C children, but the food-supply of the C class was better, as the A class was no longer receiving the ration from the Relief Mission. Examination of the data brought Miss Gribbon to the conclusion that the main factors retaining children in the C group were (1) illness; (2) size of family; and (3) position of child in family.

[1] THE LANCET, 1921, i., 474, and ii., 747.

TULARÆMIA.

UNDER this name Dr. Edward Francis,[1] of the United States Public Health Service, describes a specific infectious disease due to the *Bacterium tularense*, and transmitted from rodents to man by the bite of an infected blood-sucking insect or by the handling and dissection of infected rodents by market men or laboratory workers. It is a disease of the rural population, particularly attacking persons who work in the fields. Dr. Francis is of opinion that human cases have probably occurred in Utah every year for at least 15 years, where it is popularly known as "deer-fly fever." In rodents tularæmia has been found in the ground squirrel, the cotton-tail rabbits of Indiana, and the jack rabbits of Utah. At least six insects have been proved by various workers of being capable of transmitting the infection—viz., the rabbit louse, the blood-sucking fly, the bed-bug, the squirrel flea, the mouse louse, and the stable fly. Dr. Francis has succeeded not only in cultivating the organism in egg-free media, but also in isolating it from original sources as (1) serum glucose agar, (2) glucose blood agar, (3) blood agar, (4) each of these media plus a piece of fresh sterile rabbit spleen. The symptoms and signs of tularæmia are both local and general. During the first two days the local manifestations consist in pain and tenderness of the lymph glands adjacent to the insect bite, and on the third day the site of the bite begins to show a black necrosing centre, which soon suppurates and sloughs out, leaving a punched out ulcer. Suppuration of the lymph glands usually takes place. Systemic infection is shown by fever, characterised by daily remissions

[1] Journal of the American Medical Association, April 8th, 1922.

resembling that of a septic condition, marked prostration during the acute stage, and weakness during convalescence. Most of Dr. Francis's patients did not recover their normal tone until two or three months after the onset of their illness.

LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY.

THE Council of the London and Counties Medical Protection Society state in the annual report for 1921 that steady progress has been made in all directions of the Society's activities. Fresh applications from members asking for advice and assistance numbered 465 during the year, and in the great majority of cases satisfactory results were obtained without recourse to litigation, whilst most of those cases where litigation occurred also terminated satisfactorily. The Society's method of indemnification up to the amount of £2000—for any one member in any one year against costs of the other side and damages in unsuccessful cases—has proved very successful, and on account of the increased cost of legal proceedings the extent of indemnification has been raised to £3000. The Society's representation on the governing body of the Federation of Medical and Allied Services has enabled it to make contribution to medico-political matters.

In the report 12 legal cases are briefly described, in all of which the Society's intervention on behalf of a member was either totally or partially successful; and various forms of trouble likely to be encountered by the practitioner in the course of his professional duties are discussed under separate headings. Many charges of negligence and unskilfulness, it is pointed out, are mere excuses for not paying for medical services, or pretexts for attempts to extort money; some are due to misunderstanding, and they rarely have solid foundation. Emphasis is laid on the fact that many claims for damages are made every year in connexion with treatment of fractured bones; members are strongly advised to insist as early as possible upon an X ray examination in all cases where a fracture has, or may have, been sustained. When such examination is refused or admitted, a member should provide himself with clear evidence—preferably on paper—to prove that he was not responsible for the neglect or omission. With regard to libel and slander, members are urged not to be too sensitive to idle gossip; but more serious statements should receive prompt and firm attention, and medical men are advised to refer them first of all to the Society.

In connexion with professional secrecy, the report states that "the rule of absolute secrecy as regards what comes to a medical man's knowledge professionally should be observed almost without exception." Where a medical man's silence, however, renders him passively acquiescent in the intended perpetration of a crime, he should make it clear to his patient that if the crime is persisted in it will be his duty to break the rule of secrecy. It is further stated that it is the duty of a medical man not to disclose the nature or circumstances of a patient's illness unless he is satisfied that the inquiry is made by a near relative with a bona-fide obligation to maintain or assist the patient; such a disclosure must be made only with the patient's consent, and this rule does not apply when there is a statutory obligation to disclose the facts.

PSEUDOSCLEROSIS.

ATTENTION has been drawn recently to the myostatic sequelæ of encephalitis lethargica and their relation to Wilson's disease and pseudosclerosis. Some further light is thrown on these rather imperfectly understood diseases by Dr. G. Saiz[1] of the municipal asylum at Trieste. After the publication by Alzheimer, which defined the pathology of pseudosclerosis, and the work of S. A. K. Wilson, which put on record the clinical picture of "progressive lenticular degeneration," the two nosological entities seemed distinct and well-defined. In pseudosclerosis the pathological process affected the entire central nervous system with marked prevalence in certain parts such as the dentate and basal nuclei and the cortex, manifesting itself by a slow necrobiosis of the nervous elements and rapid progressive changes in the glia with the formation of large distorted nuclei almost without cellular body, and of giant cells with tendency to destruction without production of fibrils. In Wilson's disease the degenerative process attacked the parenchymatous elements of the lenticular nucleus, especially those of the putamen, ending with their complete destruction, while the neuroglia showed simple reactive changes insufficient to take the place of the nervous tissue destroyed, so that more or less large lacunæ of disintegration were formed. Considerable discussion has taken place concerning the relation between or identity of the two diseases which resemble each other clinically, and differ only inasmuch as in pseudosclerosis of Alzheimer type involuntary movements predominate over rigidity, while in progressive lenticular degeneration, Wilson type, the reverse holds good. Yet, in the majority of cases, these two factors intermingle and overpower other symptoms too fallacious to establish a differential diagnosis, there remaining only that of corneal pigmentation which should be peculiar to pseudosclerosis, but which is not constant and even absent in typical cases. Dr. Saiz describes a case of a woman, aged 32, who had suffered from pseudosclerosis with amenorrhœa and alimentary levulosuria for 19 years. There were involuntary movements only slightly noticeable in repose, but manifested in intentional movements and under emotion, and which consisted in short rhythmic clonic contractions in the head and limbs, alternating with choreiform movements of the limbs and tonic contractions of short duration in some muscular group. There were also dysarthria and dysphagia, but absence of paresis and pathological alterations in the reflexes. Difficulty and slowness of initial voluntary movements were very marked, as was the fixation in tonic contraction of muscles under voluntary movement. The mental state was puerile and irritable. In the later stages, after 13 years' duration, there was a moderate degree of general rigidity with almost complete incapacity for intentional movements and difficulty in speech and deglutition. The pathological changes found at the autopsy were characterised by changes in the neuroglia most marked in the putamen and caudate nucleus, but very noticeable also in the globus pallidus, thalamus and dentate nucleus, and to a less extent in the cortex and grey matter of the pons and medulla. These changes consisted in primary and essential proliferation of the neuroglia with increase in the cellules and the presence of large nuclei of irregular shape and of giant cells of Alzheimer type. The symptomatology of this case was so marked that there could be no doubt but that it was one of either pseudosclerosis or Wilson's disease. But the differential diagnosis between these two types is beset by almost insuperable difficulties; the prevalence and magnitude of the involuntary movements were significant of pseudosclerosis, but the psychical changes were little marked, there were no epileptiform attacks, and pigmentation of the cornea was absent. Nevertheless the anatomical picture corresponded fully to that described by Alzheimer. The case seems to confirm the opinion that amplitude of involuntary movements being more marked than rigidity is of first importance as a differential diagnosis even in the absence of corneal pigmentation. On the other hand, besides fibrosis of the ovaries and slight colloid degeneration of the thyroid, there was an extreme degree of cirrhosis of the liver, which is an important feature in the progressive lenticular degeneration described by Wilson.

[1] Il Policlinico, Medical Section, Feb. 1st, 1922.

DIFFRACTION HALOS.

A PAPER with the title "Diffraction Halos in Normal and Glaucomatous Eyes" was read by Mr. H. H. Emsley and Mr. E. F. Fincham at the April meeting of the Optical Society and should help in the solution of one of the problems connected with glaucoma. Both normal and glaucomatous halos have been studied by ophthalmologists in France, Germany, America, and England, but the original observations recorded in this paper mark a distinct advance. In the case of the normal halo, it is only to be observed under favourable conditions—i.e., with a small source of light with dark surroundings, with sufficiently dilated pupils. A too bright source of light causes the "corona" or radiating lines of light to mask the halo or coloured ring. The diameter of the halo seen by four different observers was between 6° and 7°, this agreeing with the observations of previous observers. On introducing a screen before the observer's eye it was found that as soon as it covered more than one half of his pupil the halo, instead of becoming uniformly fainter, disappeared entirely in the horizontal meridian, retaining its brightness in the vertical, and the further the screen was moved over the pupil the smaller did the vertical part of the halo which remained visible become. This observation, which confirms one previously made by the French ophthalmologist, Druault, is explained by the radiating structure of the crystalline lens which, it is argued, is the cause of these halos. With the glaucomatous halo, on the other hand, as the result of testing two patients, one of the several symptoms complained of being "coloured rings round lights," it was found that on passing an opaque screen in front of the eye the ring was stated by the patient to decrease in brilliancy and finally disappear, all portions of the ring disappearing simultaneously. Evidence points to the cause being a formation of œdematous globules in the tissue of the cornea due to the increased intra-ocular tension. It will be seen that this paper is of much interest to ophthalmic surgeons. We do not suggest that in the actual diagnosis of glaucoma the differentiation of halos is a test that is likely to be of great importance. On the other hand, there exist patients who observe the normal halo for themselves and, knowing something of the symptoms of glaucoma, get nervous about it. For them it would be a real service to be able to demonstrate that their fears are groundless.

THE BEARING OF RECENT PHYSIOLOGY ON DISEASES OF THE LIVER.

ON May 1st Sir Humphry Rolleston gave the first of a series of free lectures to be delivered in connexion with the Fellowship of Medicine and Post-Graduate Medical Association at the house of the Royal Society of Medicine. He described some recent points in the physiology of the liver and explained their bearing on medical practice. The liver had remarkable powers of compensatory hyperplasia, not only when a localised part of the liver was destroyed but also in generalised disorganisation of the organ, as in cirrhosis and subacute yellow atrophy. Recently Rous and Larimore had shown experimentally that the atrophy due to ligature of the branches of the portal vein was conditional on other parts of the liver being able to undergo hyperplasia; this was also seen in cases of cirrhosis. Corresponding to the power of structural compensation there was a great physiological reserve, as was to some extent shown by the absence of glycosuria in grave disorganisation of the liver, such as cirrhosis and acute atrophy. The experimental observation of Rous and McMaster that 1/20th part of the liver was sufficient to secrete all the bile made it doubtful if the often expressed opinion that obstruction of one hepatic or intrahepatic duct could cause jaundice in man; jaundice associated with such obstruction was probably either hæmolytic or due to disordered action of the liver cells. The law of contrary innervation of the gall-bladder and Oddi's sphincter at the lower end of the common bile-duct, as set forth by Meltzer in 1917, had led Lyon and others to drain the gall-bladder by means of the duodenal tube, the biliary papilla being first sprayed by a solution of magnesium sulphate which relaxes Oddi's sphincter. In this way the exact bacteriological nature of cholecystitis could be determined, and the gall-bladder aspirated—non-surgical drainage. The gall-bladder concentrated the bile to 1/11th of its bulk, the bile becoming dark and, from the addition of mucus, more viscid; whereas the bile-ducts secreted a fluid which dilutes the bile; the variations of the character of the bile in cases of obstruction—tarry or white—depended on whether the gall-bladder was healthy or incapable of performing this function. The importance of mechanical obstruction of the smaller intrahepatic ducts in causing jaundice was now considered to be subordinate to disordered function of the liver cells, as the result of which the bile was shunted into the lymphatics or blood-vessels instead of into the bile capillaries. "Dissociated" jaundice, or retention of only bile pigment or bile salts, was a result of inefficient functional activity of the liver cells, and was contrasted with "complete" jaundice, due to mechanical obstruction, in which both these were retained in the blood. The extra-hepatic formation of bile by the endothelium of the vessels and the view that Kupffer's cells in the liver manufactured bilirubin were mentioned. The two forms of bilirubin produced by the liver and by the tissues respectively had been distinguished by Van der Bergh's application or Ehrlich's diazo test to the blood serum; a direct reaction pointed to hepatic bilirubin and to obstructive jaundice, an indirect reaction, or a reaction only after the addition of absolute alcohol, pointed to non-obstructive jaundice; a combination of these two or a biphasic reaction, such as might occur in cardiac disease, indicated the presence of both forms of bilirubin and so a combination of non-obstructive and mechanical jaundice. Dr. J. W. McNee was investigating the test in this country. The formation of bilirubin and its significance, and the formation of bile salts and of cholesterol were passed in review. Lemierre and Brulé had described the test of hæmoconia, or the presence of small particles of fat in the blood serum after a meal, as showing the presence of bile salts in the intestine. The pathological relations of cholesterol and the formation of gall-stones were considered.

THE CLINICAL PICTURE OF POISONING.

THE Armstrong case is not the first occasion on which arsenical diarrhœa has been mistaken for enteritis due to some less sinister form of food poisoning. At first sight it is natural to gain comfort for these mistaken diagnoses by thinking that some such confusion is bound to occur, inasmuch as symptoms caused by some poisons especially introduced from outside the body are sure to be duplicated in the natural course of some bacterial infections, the derangement of protoplasmic activity being presumably the same in the two cases. If a certain definite injury of the convoluted tubules of the kidney may be produced by corrosive sublimate and an apparently similar destruction may be caused by the poisons of the pneumococcus, it is reasonable to surmise that the symptoms in the two cases will be the same, as far as the kidney is concerned, if the assumption of identity of lesion is correct. In other words, a specific injury will produce specific symptoms irrespective of its immediate cause. As a matter of fact, however, the actual circumstances of poisonings and diseases are never so simple that they will fall into line with this general rule. In the first place, it is doubtful whether diverse causes ever produce identical lesions. Roughly speaking, for example, corrosive sublimate and chromium salts both cause necrosis of the cells of the convoluted tubules of the kidney, but more detailed analysis shows that the parts of the tubules which are affected are not the same. And in the second place, hardly any poisons of extraneous or endogenous origin are strictly limited in their field of action. Even if two poisons injure one

organ in the same way, they will have different actions on other tissues; if both destroy the liver, one will also affect the kidney and heart muscle, while the other will injure the suprarenals and the nervous system. There is an enormous diversity of known and unknown poisons; there are enough organs and parts of organs in the body to furnish by permutations and combinations specific actions for all of them, and if eventually these possibilities are exhausted the introduction of variations in degree and kind of injury into the calculation will supply a niche for anything. It seems likely, therefore, that the identification of poisons by the symptoms they produce is a question of refinement of diagnosis. The progress of diagnosis indeed has consisted of the separation of what appeared to be identical. Of the generation of diseases which are new in the sense that they have never occurred before there is no serious evidence. Diseases are "new" only because they have not previously been recognised as different from something else. The differentiation of arsenical diarrhœa would probably be quickly effected if it were a common disease. We may hope that its characters will remain as obscure as those of the sweating sickness.

INTUSSUSCEPTION LIMITED TO THE APPENDIX.

INTUSSUSCEPTION limited to the appendix is rare. In the majority of cases of its involvement in intussusception the appendix is carried along with the intussusception incidentally or forms its apex. In the *Medical Journal of Australia* of Feb. 25th Mr. R. D. McIntosh has reported the case of a man, aged 21 years, admitted on Nov. 16th, 1921, to the Melbourne Hospital under the care of Mr. B. T. Zwar with the diagnosis of subacute appendicitis. On Nov. 1st, while in good health, he noticed a sense of fullness in the left epigastrium. Next morning he felt severe colicky pain, which began in the right iliac fossa and worked round the abdomen, returning almost to the starting point. This pain recurred daily in attacks lasting from one to three or four hours. In addition there was constant dull pain in the right iliac fossa. About two hours after the onset of pain he vomited and continued to do so intermittently for over an hour. Both types of pain persisted up to admission; their situation had not changed, but they gradually became less severe. The bowels had acted regularly without aperients until 16 days before admission, when they became constipated but were kept open by aperients. The stools were of normal appearance. The temperature and pulse were normal, but the breath was somewhat foul and the tongue furred. The abdomen moved well with respiration and there was no distension. On palpation, the right iliac region was found markedly tender and slightly rigid and there was a certain amount of hyperæsthesia. The tenderness and hyperæsthesia extended upwards towards the loin. The urine was normal. The diagnosis was inflammation of an appendix which was passing upwards towards the right kidney, probably retrocæcal and undergoing gangrenous change. Laparotomy was performed by a muscle-splitting incision over McBurney's point. The cæcum was found completely fixed by the peritoneal reflexion. The appendix could be felt through the cæcal wall passing upwards and outwards towards the right kidney. The cæcum was mobilised and it was then found that the appendix was lying inside it. Corresponding to its base was a small dimple in the cæcal wall. The cæcum was opened and a gangrenous appendix completely turned inside out, like the inverted finger of a glove, was delivered through the opening. The inversion was definitely limited to the appendix. The base of the appendix was crushed, ligated, and divided. The stump was cauterised with carbolic acid and then covered with mucous membrane. The opening in the cæcum was closed with two layers of catgut sutures. The abdominal wall was closed, drainage being provided. Recovery was uninterrupted.

SYSTOLIC MITRAL MURMURS AMONG RECRUITS.

ON both sides of the Atlantic systolic mitral murmurs have caused uncertainty in the examination of recruits and in the discharging and pensioning of soldiers, and they come under discussion in the military medical journals of both countries, the conclusion arrived at being much the same: a mitral systolic murmur by itself is no evidence of heart disease. Dr. K. R. Smith, in the last *Journal of the R.A.M.C.*, discusses the cases known as D.A.H. (disordered action of the heart), whose usual symptom is distress upon exertion, the pulse- and respiration-rates being then accelerated, alæ nasi working, and the distress subsiding only slowly. These evidences of distress on exertion are named the effort syndrome, they prove an incapacity but not necessarily a disease of the heart. Complaint is usually made of breathlessness, pain in the præcordia, exhaustion, faintness, and giddiness, and these symptoms may in many cases be removed by graduated exercises. But these men are to be rejected as unfit for duty if their symptoms are associated with attacks of rheumatic fever, with præcordial hyperalgesia, with tachycardia over 120 when recumbent, with objectively severe dyspnœa on exertion, strongly marked effort syndrome, or continuance of symptoms over many years. Systolic mitral murmurs are of little account. Patients, Dr. Smith says, if invalided for systolic murmurs alone, are subsequently nearly always found fit for active service, and in fact such men have stood the severest strains of active service without accident. Many men, moreover, doing heavy work with energy and comfort have these murmurs, but if there is cardiac hypertrophy the man must be rejected. Lieut.-Colonel Roger Brooke, Medical Corps, U.S. Army, discusses, in the *Military Surgeon* for March, 2400 recorded cases of men entered into the service with cardio-vascular symptoms. They were re-examined on discharge. Of 459 accepted with functional systolic murmur, and 687 with mitral regurgitation without hypertrophy, nine were discharged as "V.D.H.," 0·8 per cent.: but it is noted that of the nine only three have applied for a disability pension. Of the 2400, 90 were discharged, but it is held that 60 were discharged through incomplete appreciation of the effort syndrome. A mitral systolic murmur is held to be merely functional unless it is associated with cardiac hypertrophy, or with rheumatism, chorea, or tonsillitis, and with accented pulmonary second sound, or with the effort syndrome.

THE NUBILE AGE.

WHEN the Home Secretary, in reply to a question in the House of Commons, stated recently that at 12 years of age a girl is at law capable of marriage many were probably surprised. They, no doubt, also agreed with Mr. Shortt that the age is too low and ought to be raised, and regretted that such raising is likely to be postponed until some measure for the revision of the law of marriage generally is introduced. By the law as it stands a child of either sex less than 7 years of age cannot be married. A girl between the ages of 7 and 12 and a boy between the ages of 7 and 14 cannot contract a valid marriage, but only one which is inchoate or imperfect, depending for its future validity in the case of a girl upon her ratifying it when she has attained the age of 12, and in the case of a boy upon his doing so when he is 14 years of age. A boy at 14 and a girl at 12 can marry, but no one who marries such a child can obtain property by so doing, if the parents or guardians have not consented to the marriage. Otherwise the consent of the parents is not necessary in order that a marriage once celebrated may be valid, for the tendency of the law is to respect a marriage which has once taken place, whatever penalties may be incurred by persons guilty of irregularities in connexion with it. "Semper presumitur pro matrimonio," is the legal maxim

governing such occasions. The inconsistency of the law as stated above with the criminal law prohibiting promiscuous intercourse with young girls is obvious. A girl of 12, but not yet 13, is nubile. She can be submitted deliberately to sexual intercourse, if married, at an age when "unlawful" carnal knowledge of her would be felony. "Unlawful" carnal knowledge of a girl between the ages of 13 and 16 is a misdemeanour, and neither in that case nor with regard to the felony can consent on the part of the child be put forward as a defence by the person charged. In other words, Parliament has held that a girl below a certain age is not competent to consent to unlawful intercourse, but has left her capable of engaging in a contract which will presumably entail her submitting to the same act, and indeed will make it her duty as a wife to do so. It may be that in practice no registrar or minister of religion would marry a boy or girl of the ages indicated without demur, and without full assurance that parents or guardians aware of their duties as such had assented, and that marriages of young persons less than 16 years of age rarely take place. It is as well, however, to realise that there is nothing at law to prevent them, or to prevent older persons from conniving at them or bringing them about. Whatever customs may obtain in oriental countries, such marriages are undoubtedly repugnant from an ethical point of view to decent-minded people in Western Europe.

X RAYS IN OBSTETRIC PRACTICE.

IN THE LANCET of April 29th Mr. E. W. H. Shenton called attention to the possible value of X rays in obstetric work as an aid in solving some of the problems which may confront the clinician when the patient is at or near term. The possibility that this method may in the future prove useful in the diagnosis of the stage of pregnancy suggests itself, but while we hesitate to express an opinion on the scope of a diagnostic agent which is constantly improving in technique and results, it does not seem likely that the earlier stages of fœtal growth will ever afford plates to the radiographer that will repay his trouble. Mr. Shenton, indeed, does not claim otherwise. When it is remembered that the first ossifications are mere pin-points in an embryo less than three-quarters of an inch in length, and that even at the beginning of the third month, when the main centres are well established, the fœtus is only about an inch and a half long and that the ossific deposits are not very dense it is apparent that an embryo would in all probability be missed more often than found. Experience would no doubt increase the percentage of positive results, but it could hardly be expected that this method could replace the usual means of diagnosis. After the third month positive results ought to be possible with proper technique, but the bunched-up position of the fœtus, and its varying situation, would no doubt make the meaning of the record difficult to interpret, and probably interfere decidedly with any effort to get at its age with an approach to accuracy. Moreover, there are variations in ossification, and the extra centres are very small. However, there can be no doubt that in certain cases the radiologist may be of great help, and obstetricians may at least be enabled to diagnose twins in advance.

EQUITATION AS A TREATMENT OF PULMONARY TUBERCULOSIS.

THE history of horse-riding as a method of treatment of pulmonary tuberculosis is the subject of an article by Dr. R. J. Cyriax in the April issue of the *British Journal of Tuberculosis*. Dr. Cyriax makes it clear that Thomas Sydenham was responsible for the introduction of the method; riding was mentioned, as an auxiliary measure of exercise prescribed in pulmonary tuberculosis, by Celsus, but Antyllos, in the second century A.D., stated that this form of exercise was very injurious to the chest. The "Phthisiologia" of R. Morton, published in 1694 (five years after Sydenham's death) contains no allusion to riding; not until the beginning of the eighteenth century, when Sydenham's posthumous fame arose, did riding become a popular treatment for phthisis in England, although considerable use had by then already been made of it upon the Continent. Several of Sydenham's contemporaries strongly recommended the method; among them was F. Fuller, who extended its prescription to many other chronic diseases. John Wesley was reputed to have been cured by the new remedy, but it was soon found to possess serious disadvantages; before 1830 the reaction had set in, both in England and abroad, and the limitation of the uses of the method to mild forms of consumption suggests that disastrous effects of its indiscriminate application had been observed. The improvements noted in cases during the period when the treatment was popular were ascribed by Sydenham and his followers not to the fresh air, but to the exercise obtained on horseback, and various rocking machines and swings were from time to time elaborated for home treatment of phthisical patients. Dr. Cyriax points out that even allowing for the great probability that many of Sydenham's own cases were not in reality tuberculous, it is hard to understand how the indiscriminate use of equitation proved sufficiently successful to warrant emphatic support for the method. But no doubt in certain cases the patients were exposed to fresh air which they would not otherwise have obtained. Laennec regarded the method as useless, and at the beginning of the nineteenth century it had entirely lost its position as one of the principal forms of treatment in pulmonary tuberculosis.

THE MINERAL SPRINGS OF AUSTRIA.

ON another page of this issue our Hungarian correspondent describes the Czecho-Slovakian watering-place Pöstyén, formerly the Hungarian Pistyàn; it will be of interest to make some reference to the Austrian watering-places to the west of the Danube. Our Vienna correspondent writes as follows: The Austrian Ministry of Public Health has caused a State register to be compiled containing information concerning all the mineral springs of Austria, including those in the district, formerly called Burgenland, which has been handed over by Hungary to Austria under the terms of the Treaty of St. Germain. The Austrian Republic contains 90 places where thermal springs are found; the springs number 160, and there are in addition 30 other localities with 50 cold-water springs having no special chemical or physical quality, but used for bathing on account of their mild radio-active properties. The majority of the Austrian springs give sparkling alkaline waters, containing carbonic acid; a number of them contain sulphuretted hydrogen, potassium chloride, sodium chloride, magnesium, and iron; their mean temperature varies between 24° C. and 39° C. One resort, Hall, contains the strongest iodine and bromide water in Europe, and several others have strong hot sulphur baths. A few months ago a powerful spring was accidentally discovered at Schallenbach in Upper Austria, by men boring for oil at a depth of 1600 feet; a jet of warm water appeared, which proved to have a large content of sulphur practically unmixed with other minerals. This spring produces 65 litres per second—more than any other in Europe. Other well-known waters are those of the typical radio-active springs of Gastein, and the salt lake at Neusiedl, which sometimes dries up to one-tenth of its size at high-water mark, and of which the large sodium content is similar to that of the lakes of Western Asia and Syria. Most of the Austrian springs can be used for drinking purposes—either therapeutically, or as simple table-waters—in addition to their uses for bathing. Not less than 30 per cent. of the total number of waters still require exact investigation with regard to their chemical and physical properties. A special department of the Ministry of Health will deal with this matter in collaboration with the chemical department of the University of Vienna. Two geological fissures, one running north and south

on the eastward side of the Alps, and the other running east and west in the Styrian group, are apparently responsible for the numerous springs in this part of Central Europe. Along these lines of fissure the Austrian Government proposes to continue its search for further useful mineral waters.

THE "NEW YORK MEDICAL RECORD."

THE final issue of the *Medical Record*, the well-known New York weekly medical publication, appeared on April 22nd, when it was announced that the journal had been sold to, and combined with, the *New York Medical Journal*, which appears fortnightly. Throughout the 56 years of its service to the medical profession, the *Medical Record* has had the same publishers, Messrs. William Wood and Co., and but two editors. Dr. George F. Shrady guided its course for the first 38 years and was succeeded by his assistant, Dr. Thomas L. Stedman, who has long been the widely esteemed dean of American medical editors. The firm of William Wood and Co. will now devote its energies entirely to the publication of medical books, in which service it has been engaged for 118 years.

Many of the most important discoveries and developments in the progress of medicine were first announced to the American profession by the *Medical Record*. These include Lister's doctrines of antisepsis, Koch's discovery of the tubercle bacillus, the employment of cocaine in eye surgery, the Rontgen rays, the discovery of the antitoxins of tetanus and diphtheria, and the discovery of radium.

THE Annual Oration of the Medical Society of London will be given by Mr. H. J. Waring on May 8th at 9 P.M., the subject being "Hospitals: Some Suggestions as Regards their Future."

THE next session of the General Council of Medical Education and Registration will commence at 2 P.M., on Tuesday, May 23rd, when the President, Sir Donald MacAlister will take the chair and give an address.

A COMMITTEE, consisting of Sir R. Henry Rew (chairman) and Messrs. A. K. Davies, Rayner Goddard, A. E. Holmes, and J. F. Mason, has been appointed by the Board of Trade to inquire whether optical and other scientific instruments manufactured in Germany are being sold or offered for sale in the United Kingdom at prices below those at which such instruments can be profitably manufactured in the United Kingdom. The committee has been appointed under the powers conferred upon the Board of Trade by Part II. of the Safeguarding of Industries Act, 1921, as a result of representations made by the British Optical Instrument Manufacturers, Ltd., the British Photographic Manufacturers' Association, the Spectacle Manufacturers' Association, and the Drawing Instrument Manufacturers' Association.

CHILDREN'S HOSPITAL AT NORTHWICH.—A bazaar promoted with the object of building a children's wing at the Northwich Victoria Hospital resulted in the raising of £3250.

HOSPITALS APPEAL.—At the annual Easter banquet, held at the Mansion House on April 26th, the Lord Mayor, giving the toast of the Royal hospitals, stated that so far £115,000 had been contributed towards the cost of the nurses' new quarters at St. Bartholomew's Hospital, the foundation-stone of which was laid by the Queen last year. Of that sum, Sir Edward Stern had given £25,000 and Alderman Sir John Bell £10,000—these gifts having been made anonymously some time ago—and 17 generous citizens had each given £1000, whilst 130 more had each given £100. The £115,000 enabled the governors to build one block to accommodate 165 nurses. Two other blocks had been designed giving accommodation for 550 nurses in all, but these would not be proceeded with until sufficient funds were collected. For this work and for the hospitals generally the Lord Mayor made a strong appeal.

Public Health Services.

GENERAL PRACTITIONERS AND WELFARE CLINICS.

CONTRARY to the recommendation of its public health committee, St. Pancras borough council has decided that the post of assistant medical officer of health for maternity and child welfare, rendered vacant through the dismissal of Dr. Gladys Miall-Smith on her marriage, shall be open to either sex, not to men only. The committee is said to have made the recommendation in order that those women who prefer to consult a male doctor shall have more chance of doing so. At present the council maintains 33½ consultations per week, of which 28 are held by 14 part-time medical men and women. Of these, 19½ consultations are at present held by women and 8½ by men.[1] It is considered desirable, for reasons of administration, that the rest of the consultations should be held by the full-time assistant medical officer. In advertising the part-time posts it is usual in this borough to include a phrase to the effect that applications from local practitioners will be given due consideration, but so far the bulk of the local practitioners have given very little indication of any desire to take part in the work. This has hitherto been found in other boroughs also, to the mutual disadvantage of the clinic and the practitioner. The remuneration offered might not compensate him (or her) in actual cash for the time taken up, but the experience of closely watching the development of healthy children would be as valuable in his practice as his intimate knowledge of the end-results of faulty feeding and unhygienic conditions would be to the mother. Moreover, such coöperation alone can correlate the work being done on the preventive and curative side of medicine and create and maintain happy relations between the two branches of the profession.

SCHOOL MEDICAL SERVICE.

ANNUAL REPORTS FOR 1921.

Bristol.

Of a school population of over 57,000, 18,000 children underwent the routine and 15,000 a special medical examination; altogether over 18,000 showed some defect requiring treatment or observation. Of 5000 found at routine inspections requiring treatment, 3000 had received it by the end of the year. Bristol has now four clinics the general treatment of each of which is in charge of the school doctor of the area. The attendances for the year amounted to 115,650. A new departure was the establishment in May of an X ray department for the treatment of ringworm. About 300 new cases of this disease appeared last year and 47 of them received X ray treatment. The remainder were for the most part treated by local application at the district clinics. Dental examination of 3177 children aged 5 to 6 revealed 2652 requiring treatment, about half of these were attended to. Of 1389 cases for whom spectacles were prescribed only 7 failed to obtain them. The aural clinics accounted for 22,607 attendances. Mr. J. P. I. Harty, honorary surgeon to the ear, throat, and nose department of Bristol Royal Infirmary, reports that "the treatment afforded at the school clinics is of necessity far more efficacious than can be obtained at any of the voluntary institutions. Daily attendance of the child and skilled administration of the prescribed treatment is feasible, while in institutions, except in a few special instances, drugs are dispensed and the best is hoped for from the parents. The results obtained, especially in the case of suppurative middle-ear disease, are immeasurably superior." He urges, too, that operative treatment in the case of adenoids is too long delayed. "The period at which operation should be performed is not determined by any particular age, but rather by the time when symptoms of chronic infection of lymphoid tissue appear. Once mouth-breathing is well established

[1] The fractions being due to the fact that some clinics are held monthly and some fortnightly.

the full benefits of operation can never be anticipated, and frequently chronic infection of the ethmoidal labyrinth or accessory nasal sinuses has supervened."

The municipal secondary school medical examinations revealed 31 per cent. boys and 28 per cent. girls with mouths in a very bad condition. 10 per cent. of the girls suffered from constipation and indigestion, and 22 per cent. from headaches. 27 girls were verminous. Of the children in attendance 80 per cent. are drawn from the public elementary schools. Dr. R. A. Askins is making a determined effort to rid the Bristol schools of vermin, and with this object in view each child attending an elementary school was examined at least three times during the year, and 12,077 home visits, three times as many as in 1919, were paid by the school nurses. This is a pressing problem, the solution of which will probably be found in the home rather than the school. No mention is made in the report of the provision for dull and backward children. There are two schools for mentally defective, with 279 children on the registers, and one for physically defective with 158 in attendance.

Glasgow.

Out of a school population of 198,000, over one-third of those in attendance were medically examined with 56 per cent. of parents present, as compared with 63 per cent. last year. A clinic for operative treatment of enlarged tonsils and adenoids was opened in May, and at the end of the year had dealt with 121 cases. The children are all examined on the day of admission; the operation takes place on the following morning, and 24 hours after operation, all being well, they are discharged. They are not allowed to return to school for at least ten days, and their teachers are requested to assist by supervision and suitable exercises in the re-establishment of nasal breathing. Of 1418 cases of scabies 419 received treatment by bathing at the special clinic for the treatment of scabies, and during the winter months these children had a cup of hot cocoa given them before leaving for home. The number of cases of this description showed a decrease of 500 on last year. Unsatisfactory footgear was reported in 396 cases, as against 604 the previous year, and this was balanced by 847 children appearing with no footgear at all last year compared with 183 for the previous year. This is probably explained by the hot summer last year, for a number went about without boots. The number of children on the special schools register was: physically defective 2865, mentally defective 1475, deaf 101, blind 42, attending myope classes 99. Dr. Ernest T. Roberts draws attention to the increase in the amount of treatment carried out at the school clinics during the year, the increase being rather in the number of attendances than in the number of cases treated. This was due mainly to the clinics being available on a larger number of days. It is gratifying to note, in view of the small-pox epidemic the previous year, that there has been no school closure for epidemic disease during the year.

Dewsbury.

Dr. Oscar Holden has presented an instructive and comprehensive report of the work for the past year. The actual cost to the ratepayer for the school medical service was 0·95 of a penny. Of 2658 children examined 2033 had dental caries, 200 defective vision, and 249 lung disease apart from tuberculosis. Most of this lung trouble was accounted for by bronchitis among the entrant group and was more prevalent among boys than girls. There were 170 cases of enlarged cervical glands, none of which were tuberculous, being due for the most part to decayed teeth. The investigation started in 1920 into the extent and type of crippling among children is still proceeding and ought, when completed, to form an important contribution to our knowledge in this direction. External eye disease was found in 6 per cent. of entrants, about 5 per cent. of the intermediate group, and 3 per cent. of leavers. During the year the school nurses examined 13,730 children, 220 of whom were excluded for uncleanliness. The new school clinic at Dewsbury includes a cleansing and disinfecting station, and while the children are being bathed their clothes are disinfected in such an efficacious and rapid manner that these are dried ready to put on in half an hour. As Dr. Holden points out, the difficulty here is the home, and very often the fault lies not with the parents but with the landlord. Indeed, as he says, "the wonder is not that the children are dirty but that the parents manage to keep them as clean as they do." Attention is drawn to the lack of suitable arrangements for drying wet clothes and to the absence of proper ventilation in many of the cloak rooms. This is a matter calling for urgent attention in a very large number of schools throughout the kingdom, and more especially in country districts where children come long distances to school. Often no provision is made for drying clothes, so that the children run about in wet boots all day and resume their sodden wraps to go home in the evening.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

MEDICAL VISIT TO PÖSTYÉN (PISTYÀN).

THE directors of Pöstyén (in Hungarian, Pistyàn) have invited medical men interested in balneology to visit their health resort during the Easter holidays. Pöstyén, which was formerly in Hungary and is now in Czecho-Slovakia, ranks with Carlsbad, Franzensbad, and Marienbad. Medical men from Czecho-Slovakia, Hungary, and Austria took part in the visit. The sulphuric springs and mud of Pöstyén are, we hold, unrivalled; it may interest the readers of THE LANCET to read a brief description of the resort as seen by the present writer on the occasion of this international visit.

The water comes from an underground basin of an area of 33,000 square feet, at a temperature of 140° F., and shoots upwards with such force, and in such quantity, that the surplus mixes with the waters of the Waag (a river near Pöstyén). Thus the surface of the ground for a large area is warm, and hot streams burst forth in this part of the country in both summer and winter. In all parts of the basin the mineral mud is found in great thickness, and the open river contains quantities in spite of the strong current.

The special advantages which give Pöstyén its peculiar position amongst thermal bathing resorts are as follows: 1. The unequalled high temperature of the water. Although patients are strictly forbidden to take the baths at the natural temperature, experience proves that the fact that the Pöstyén water is cooled, not heated, before treatment, is of the greatest therapeutic importance. 2. The rich sulphur content is chemically combined with the thermal water and during the bathing none of its power is lost. The water gives off no objectionable odour. 3. The sulphur mud, forming a sediment in the spring channels, and being available in unlimited quantities, provides facilities unobtainable elsewhere. This local treatment with mud is concentrated upon the afflicted part of the body. Foot or hand baths, &c., are used; where this treatment is inconvenient, the patient is poulticed with mud. The several bathing establishments accommodate 2000 to 2500 patients at the same time, but in recent years the increased number of visitors has rendered them inadequate, and the owners of the baths contemplate the building of new establishments.

Methods of Treatment at Pöstyén.

The following curative methods are employed:—1. Basin baths of pure mineral water (the so-called mirror baths), temperature 100° F. 2. Basin baths with mud residuum, temperature 100° F. 3. Private baths of pure mineral water. 4. Private mud baths. 5. Local mud baths and poulticing (hand, foot, arm, and shoulder poultices). The temperature of the last three baths can be regulated according to the constitution of the patient, or to the medical prescription; they are taken from 89° F. upwards.

Excellent results are also obtained by the following methods:—(*a*) Massage. (*b*) Swedish physical

exercises in a completely fitted gymnasium, erected for the purpose, and containing Zander and Herz electrical appliances. (*c*) Drink cure; the thermal springs produce a pure and wholesome drinking water, which contains magnesium sulphate and lithium chlorate. These constituents greatly assist the digestive and excretory systems. Furthermore, the sulphur and lithium benefit cases of gout and rheumatism, and diseases arising from insufficiency of metabolism, (*d*) Inhalations of sulphur fumes.

The cold hydropathic method, the carbonic acid bath, which has proved to be an excellent nerve-restoring tonic, and the cold swimming bath in the Waag are more for the accommodation of visitors accompanying patients.

The Medical Value of Treatment at Pöstyén.

The most remarkable effect of the Pöstyén treatment as a whole is the removal of chronic exudations, especially those about joints and tendons, which have caused so-called "spurious ankylosis." Patients thus crippled, with more or less evidence of peripheral paralysis, and some in whom paralytic and neuralgic conditions are evidently associated with, or follow, some serious change in the central nervous system, have received successful treatment in large numbers. Many cases of inveterate rheumatism, gout, and sciatica have been remarkably relieved. The late Sir T. Spencer Wells wrote of the Pöstyén treatment years ago as follows: "The Pöstyén treatment is resorted to in a great number of different conditions, the chief of them being those which are loosely called 'gouty,' and which lead to more or less swelling, stiffness, and deformity of the joints, and are associated with the uric acid diathesis. Next to the gouty come the rheumatic affections of muscles and joints, ankylosis, and neuralgias, especially sciatica. Sufferers from chronic rheumatism soon experience remarkable benefit; and so do many with chronic periostitis, whether a sign of tertiary syphilis or not, and many paralytic cases, especially hemiplegia, which has followed on apoplectic attack or some wound or injury, or lead or mercurial poisoning. After the last war a great many wounded men who suffered from simple and compound fractures of bones or chronic exudations after other injuries or neuralgia, after amputations or resections, recovered rapidly at Pöstyén, and so with other chronic inflammatory swellings of glands, pelvic exudations, metritis and its results, uterine fibroma, and hæmorrhoids. At Pöstyén we have, perhaps, the best sulphur baths hitherto made use of, more powerful and less disagreeable than any of the others."

Radio-activity of the Pöstyén Water and Mud.

The discovery of radium has brought scientific authorities nearer to the discovery of the actual healing powers of many springs, and the Pöstyén springs are in the first rank as regards radium content. To demonstrate the quantity of radium contained in the Pöstyén mud, Dr. Edward Weiss has made some interesting radium photographs.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lieut.-Comdr. H. St. C. Colson to be Surg. Comdr.

T. G. Roche to be Surg. Lieut.

The following appointments have been notified: Surg.-Comdrs. J. Thornhill to *Hecla;* R. W. G. Stewart to R.N. Hospl., Chatham; W. C. B. Smith to *Pembroke*, addl., for R.N. Barracks, Chatham; P. B. Egan to *Woolwich;* G. Carlisle to *Fishgard;* G. A. S. Hamilton to *Dragon;* and E. S. Wilkinson to *Pembroke*, addl., for R.N. Barracks, Chatham. Temp. Surg.-Lieuts. (D.) D. C. Eglington to *Pembroke*, addl., for R.N. Barracks, Chatham; and E. C. Bevis to *Ganges*, for Boys' Training Establishment, Shotley.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. H. S. Anderson is placed on the half-pay list on account of ill-health.

Lt.-Col. B. S. Bartlett retires on ret. pay.

Maj. (temp. Lt.-Col.) T. H. Gibbon to retain his temp. rank whilst spec. empld.

Capt. R. W. Galloway relinquishes the temp. rank of Maj.

Lt. (temp. Capt.) J. E. Rea to be Capt.

Temp. Capts. relinquishing their commns.: S. A. McClintock (granted the rank of Maj.); E. P. Marett, R. M. Walker, C. E. Hibbard, A. Girvan, W. Reynolds (retain rank of Capt.).

Temp. Hon. Capt. G. W. Stephens relinquishes his commn. and retains the hon. rank of Capt.

ARMY DENTAL CORPS.

Lt. (temp. Capt.) S. H. Woods to be Capt.

ARMY RESERVE OF OFFICERS.

Lt.-Col. L. A. Mitchell, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

Lt.-Col. A. Cary relinquishes his commn. and retains rank of Lt.-Col., with permission to wear prescribed uniform.

Maj. H. H. B. Cunningham vacates the appt. of D.A.D.M.S. Welsh Divn.

Majs. S. E. Rigg and D. Walker, having attained the age limit, are retired and retain the rank of Maj., with permission to wear the prescribed uniform.

Capts. D. N. Hardcastle, T. S. Hele, and M. Thompson are retired and retain the rank of Capt.

TERRITORIAL ARMY RESERVE.

Capt. J. S. Ward, from Genl. List, to be Maj.

ROYAL AIR FORCE.

Flying Officer J. A. Perdrau to be Flight Lt.

Flight Lt. H. C. E. Quin relinquishes his temporary commission and is permitted to retain the rank of Capt.

INDIA AND THE INDIAN MEDICAL SERVICE.

The King has approved the retirement of Lt.-Cols. H. S. Wood and H. Kirkpatrick.

Lt.-Col. H. Burden (retd.) is granted the rank of Col.

Phanindra Nath Ghose is granted the rank of Lt. on retirement.

Maj. G. M. G. Millar has been appointed surgeon to the British Legation to Kabul, and Lieut.-Gen. Sir W. Edwards, Director-General, I.M.S., has been nominated a member of the Council of State. Lieut.-Col. H. Innes, civil surgeon, Lachimpur, has made over charge of Dibrugarh Jail to Maj. A. Babonau; Maj. A. Bavonau, civil surgeon, Sibsagar, has handed over charge of the Jorhat Jail to Lieut. C. Mullins; and Lieut.-Col. H. Wood, civil surgeon, Sylhet, has made over charge of the Sylhet Jail to Lieut.-Col H. Innes.

In the vacancy caused by the confirmation of Lieut.-Col. Mackenzie, Deputy Sanitary Commissioner, Punjab, in the appointment of Professor of Pathology, King Edward Medical College, Lahore, Lieut.-Col. C. A. Gill, Chief Malaria Medical Officer, Punjab, is confirmed as Assistant Director of Public Health. Lieut.-Col. T. H. Symons, on relief by Maj.-Gen. G. G. Giffard, has been appointed Professor of Surgery, Medical College, and First Surgeon, General Hospital, and also Superintendent General Hospital, Madras. Capt. C. Newcomb has been appointed to act as Professor of Medical Jurisprudence, Medical College, Madras, in addition to his own duties, vice Maj. Bt. Lieut.-Col. E. A. Roberts, deceased, and, until date of relief, by Maj. A. P. G. Lorimer.

DEATHS IN THE SERVICES.

Col. Francis Warburton Begbie, C.B.E., A.M.S., retd., who died on April 25th, was the eldest son of the late Dr. J. W. Begbie, of Edinburgh, and was born in 1864. Educated at St. Bartholomew's Hospital, he qualified with the M.R.C.S. and the L.R.C.P. Lond. in 1890, and in the following year obtained his first commission in the R.A.M.C. He saw active service in India, where in 1895 he took part in the Chitral Campaign and obtained the medal and clasp, and also throughout the South African War. Twice mentioned in despatches, he was awarded both the Queen's and the King's medals with several clasps. He reached the rank of Major in 1903 and that of Lieutenant-Colonel in 1913, and at the beginning of the late war was appointed P.M.O. at Maymyo, Burmah. Later he was transferred to Poonah, and afterwards was in command of the base hospital of the Mesopotamia Field Force. He then became commander of the training centre at Ripon, and subsequently went to France, where he was successively officer in command of No. VI. General Hospital at Rouen and A.D.M.S. at Dieppe, Le Tréport, and Dunkerque. He was several times mentioned in despatches, and received the Star, the General Service Medal, and the Victory Medal. Until his retirement two years ago when he received the C.B.E., Colonel Begbie had acted as A.D.M.S. at Devonport, while he has also been a member of the Board of Pensions at Exeter.

Correspondence.

"Audi alteram partem."

A METHOD OF KEEPING HOSPITAL CASE RECORDS.

To the Editor of THE LANCET.

SIR,—The scheme of filing hospital case records which has been in use at the Royal Free Hospital during the last 18 months appears to us to present such definite advantages over the older system still employed at some hospitals that we think it worth a brief description. On first acquaintance with the scheme its apparent intricacy may make it appear unpractical, but in actual working it is quite straightforward though needing method and accuracy; from the point of view, however, of the advancement of scientific medicine and the future investigator the advantages are great, and it might even be said to be the only practical method of record keeping. The keeping of case records serves two useful purposes, it is on the one hand valuable to the patient in that a history of his illnesses is available, and on the other hand it is useful to the profession as a whole as being the basis from which statistics are drawn. The ordinary system in which the notes of patients are bound yearly in volumes, under the names of the members of the staff under whose care they have been, is a simple one, and if the name of the patient, the date of his admission into hospital, and the name of the physician or surgeon are known, the report of the case can usually be found. It is not, however, so simple for the unfortunate research worker. If he happens to be interested in the after-history of a particular disease, a particular operation, or a particular symptom in a particular disease, he has laboriously to wade through tome after tome and page after page before he can collect sufficient material for his investigation. In the filing system the material for research lies ready to be used, and in a portable form.

The case notes are filed under the main disease, and diseases are arranged according to the chief anatomical system involved. Anatomical sections are labelled according to the letters of the alphabet by which they can be easily memorised; thus A for arterial, B for blood, C for cerebral, D for digestive, &c. Capital letters are used for the main headings and small letters subdivide each section; for instance, digestive system has subsections: a, mouth; b, lip; c, tongue, &c. The subsections are again divided as may be necessary—to give an example—diseases of the stomach are filed under the letters D.m. and this section is further subdivided into gastric ulcer, gastric carcinoma, simple gastritis, &c., placed in alphabetical order. General systemic affections do not fall into the anatomical category and so are placed under a separate heading W with the following subsections:—

(*a*) Specific fevers—e.g., measles.
(*b*) Protozoal infections—e.g., malaria, syphilis.
(*c*) Bacterial fevers—e.g., typhoid fever.
(*d*) Metabolic diseases—e.g., diabetes.

Symptomatic conditions in which no accurate diagnosis has been made are placed under the general heading X and the section subdivided into the anatomical headings. Thus hæmaturia X.U (urinary system), fits X.C (cerebral system).

The notes are taken on loose sheets by students in the wards, are supervised and corrected by the honorary staff or registrars, and, together with the ward charts, pathological and other reports, form the complete record of the case. After the discharge of the patient an abstract is made by the registrar, who affixes the appropriate filing letters, and the complete record is given to the filing clerk, who types several copies of the abstract. Of the spare copies one goes to the physician or surgeon, one to the doctor who sent the patient to hospital, others to the various departments which may have been interested in the investigation or treatment of the case, and one to the out-patient department to be filed with the out-patient letter.

The notes are kept in a filing drawer cabinet, which accommodates those of the current year. The notes of each patient are faced with a stiff filing card and for easy identification different coloured cards are used for medical, surgical, and gynæcological records, and the position of an upstanding tag left, centre, or right, serves to indicate the physician or surgeon under whom the case was admitted. The notes in each section are kept in alphabetical order, and when a section becomes overfull it is withdrawn and put up in a cardboard book file, labelled with the section letters and the disease. A card-index of names is also kept by which the records of individual patients can be easily traced.

If some such system were more generally employed in hospitals a wealth of clinical observations and records of disease would be made available for general reference, not only by the staffs of the hospitals but for any accredited investigator. If a member of the staff wishes a record of any special condition or operation to be kept he informs the registrar and a cross-index reference is made at the time of filing the notes and this could also be done for the purpose of any general inquiry. Recently questions concerning cases of pulmonary embolism were sent round to the surgical registrars of London hospitals as a preliminary to a discussion at the Royal Society of Medicine, but at the meeting it was evident that the statistics on the subject were far from complete. It is in such cases as this that the need for scientific record keeping is shown.

Conclusion.—This system has been in use only 18 months, but it has been proved to have the following definite advantages.

1. The notes being unbound can be returned to the wards when a patient is readmitted and direct continuity of record is thus obtained.
2. The notes of a case can usually be found when, as so often happens, the name is forgotten and only the disease remembered.
3. The diseases are filed together and form a statistical record for the year.
4. Research on special symptoms or conditions is facilitated by cross indexing.
5. The honorary staff are automatically supplied with abstracts of their cases, as also is the general practitioner interested in the patient.

In conclusion we should like to thank Dr. Scott Williamson, who introduced the system, and the honorary staff for allowing us to publish this description of it.—We are, Sir, yours faithfully,

D. C. HARE, C.B.E., M.D., M.R.C.P.,
Medical Registrar, Royal Free Hospital.
C. LAMBRINUDI, F.R.C.S. Eng.,
Surgical Registrar, Royal Free Hospital.

April 27th.

NASAL DIPHTHERIA AND FOREIGN BODIES.

To the Editor of THE LANCET.

SIR,—From time to time the condition of nasal diphtheria is described in medical journals. We read of its great resistance to treatment and of its importance from a public health point of view. The following two almost identical cases illustrate a connexion which we do not remember having seen mentioned before:—

CASE 1.—Marian L., aged 7, attended the aural school clinic in September, 1920, with persistent discharge from the right nostril. A swab was taken and reported positive to K.L.B. by the town health authorities. Admission to the isolation hospital followed, where the child remained 11 weeks. The nasal discharge continued, the child apparently none the worse for it. A second swab, taken at the clinic, was still positive. A second period of three weeks at the isolation hospital followed, the child this time being treated with detoxicated diphtheria vaccines, until several swabs were negative. The discharge, however, returned again, showing K.L.B. and necessitating a third period of 17 weeks at the hospital. Tonsils and adenoids were removed in the vain hope of curing this "carrier" condition. The discharge continued unchanged, in spite of antiseptic nasal douches and sprays, until finally, in March, 1922, about 18 months since the child came under notice, a shoe-button was removed from the nostril by one of us (T. A. C.).

CASE 2.—Albert G., aged 9. This case is almost a repetition of the first. The boy came to the clinic with unilateral nasal

discharge in February, 1920. The swab was positive to K.L.B. and subsequent swabs between that date and September, 1921, continued to be so. The boy had two periods at the isolation hospital, one of four and a half, the second of three and a half months, without improvement. In July, 1921, the nasal condition seemed to take on an atrophic character with very offensive crusts. It was treated with glycerine and glucose plugs and improvement resulted, so much so that a swab was reported negative. But the symptoms continued. Finally, one day when I was removing a large crust, I was extremely surprised to find embedded in it the decomposing remains of a shoe button. It appeared wedged between septum and posterior half of the right inferior turbinate.

Both cases cleared up immediately after removal of the foreign body. From the layman's point of view these cases seem to indicate extreme neglect. Yet no current text-book gives any warning that the condition of so-called "chronic nasal diphtheria" is ever due to the presence of a foreign body. It has been our custom so far in cases of unilateral nasal discharge only to make an exhaustive search for a foreign body when the report for ? K.L.B. returned negative. In future we intend to do so even in the face of a positive report, as we now incline to the view that a condition of persistent nasal diphtheria does not exist unless caused by a foreign body.—We are, Sir, yours faithfully,

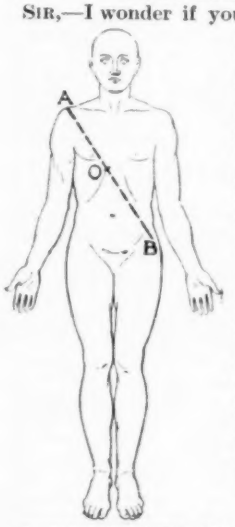
J. KEEN,
T. A. CARSON.

Leicester, April 28th, 1922.

A SUGGESTED POINT OF CARDIAC CORRELATION.

To the Editor of THE LANCET.

SIR,—I wonder if your readers will be so kind as to test the value of a point (O) whereby to correlate the heart's impulse beat. The point (O) is midway between the top of the right acromion process (A) and the left anterior superior iliac spine (B). It corresponds nearly with the point of intersection by a similar line from the left acromion process to the right anterior superior iliac spine. The impulse beat of a normal heart appears to be 2–3 in. to the left, and if anything slightly above the point (O). Any heart whose impulse beat is below this point is abnormal. The average length of the line (AB) is about 24 in. in men and 23 in. in women. A line that varies considerably from this length emphasises some defect.



I am, Sir, yours faithfully,
G. ARBOUR STEPHENS.

Swansea, April 20th, 1922.

UREA-CONCENTRATION TEST.

To the Editor of THE LANCET.

SIR,—Mr. Frank Kidd's article in THE LANCET of April 22nd raises the question of priority in the "urea-concentration test." Obviously he is not quite certain whether or not he is right in his contention that the test was employed before we introduced it, for he states (quite wrongly, as it happens) that "MacLean says he introduced the test, but I do not feel convinced of this statement." In his attempt to score a point Mr. Kidd has been badly tripped, and has only succeeded in showing that he has completely failed to understand the principle on which our test is based. If Mr. Kidd will look more closely into the papers by Albarran, Pirondini and McCaskey, which he quotes, he will find that they are not concerned with *urea concentration* at all, but with the *amount of the ingested urea which is excreted over definite periods of time*. Our test is based on the power which the kidney possesses to concentrate urea in the urine from the small quantity present in the blood. This has no essential bearing on the time it takes to excrete a certain amount of urea. Indeed, we have definitely shown[1] that healthy and nephritic subjects may excrete quite as much urea in a given period of time, though the concentration in the healthy individual is high, whereas that of the nephritic is low. In McCaskey's experiments the large amount of fluid given with the urea would in itself tend to prevent the kidney from showing its full capacity for concentration. We do not, of course, claim any priority in the employment of large doses of urea as a means of testing renal function, and here we are on the same ground as the surgeon who introduces a new operation and does not expect to be denied priority because of the fact that he may not have used new instruments.

From our own small knowledge of the literature we could give Mr. Kidd several additional references bearing on the use of urea, and we may say that we were quite familiar with those he quotes. To judge from the literature, the older method has proved of no great value, and has met with no very wide acceptance; it is theoretically wrong and practically unsatisfactory. As far as we are aware Ambard, in his "Physiologie des Reins," is the only authority who has attempted to elicit maximum urea concentration by a method in which limited fluid ingestion was combined with a very heavy protein diet over a period of several days. Our own method of arriving at some idea of the concentrating power of the kidney for urea appears to us to have definite advantages over Ambard's from the point of view of time, expense, and the patient's comfort. We object to the statement that the Albarran test has been popularised by us. Our "urea-concentration test" is a new one, as far as we know, and is not a re-introduction of the older methods. Anyone asserting that it is merely displays ignorance of the fundamental principle on which the test is based. That the test should be employed by individuals who do not understand its significance is perhaps cause for reflection, but, of course, under present conditions this can hardly be avoided.

Discussion of priority demands a knowledge of the literature to which few of us can attain, but, above all, it demands that we should first ask ourselves the question contained in Acts viii., 30, to which we refer Mr. Kidd.—We are, Sir, yours faithfully,

HUGH MACLEAN.
O. L. V. DE WESSELOW.

Clinical Medical Unit, St. Thomas's Hospital, May 2nd, 1922.

THE LIBRARY OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

To the Editor of THE LANCET.

SIR,—In the interesting annotation in your issue of April 29th on the work of the Library of the College of Physicians at Philadelphia, you express astonishment that our large medical libraries have not yet employed the photostat. The primary reason for this neglect is doubtless that of expense. The photostat in 1915 was advertised in this country by a Coventry firm at prices ranging from "Photostat No. 0" at £80 up to "No. 3" at well over £200. Since that date these prices have possibly increased, and as medical libraries have been driven, in common with all other learned libraries, to practise strict economy, the photostat, like the epidiascope, has probably become an ideal of the far future.

American medical libraries are lavishly staffed and subsidised, and from them a policy of enterprise (and may I say bustle?) is probably expected. I should think that the library also finds employment for highly-salaried officials with time on their hands. Moreover, America, except in the private collections of millionaires, lacks, to an extent a European can scarcely imagine, all those accumulations of antiquity—old books, buildings, pictures, and so forth—which are a commonplace here. America needs copies

[1] British Jl. Exp. Path., 1920, i., 53.

and replicas, such as would be superfluous among us. Hence the work of the photostat in reproducing excerpts, title-pages of old and to us familiar books, and well-known prints.

Were the photostat established in medical libraries here, it could doubtless do good occasional work in bringing out limited editions of unique books. Thus the works of Purkinje, at present unknown except from hearsay, might be duplicated for the benefit of those interested in the physiology of vision and the discovery of finger-prints. His work on finger-prints is practically unknown save for the copy in this library, and of his work on vision perhaps only one copy is extant in England in the possession of Dr. Edridge-Green. Copies of Hunterian essays, or curious archives, or other MSS., might also be multiplied to a limited extent. An anatomical drawing is beyond the powers of any typewriter, and here the photostat is of very real use.

At least one great English library has of late years turned many an honest penny by photostating codices and other unique bibliographical treasures for America. I do not name the library. It is not this one, for it is about 400 years old, but for the sake of my calling I trust the copyrights reside in the librarian jointly with his noble institution. His charges should vary with the rarity of the works he duplicates.

I am, Sir, yours faithfully,

VICTOR G. PLARR,

April 29th. Librarian, Royal College of Surgeons of England.

CARCINOMA OF THE LUNG OF UNUSUAL DURATION.

To the Editor of THE LANCET.

SIR,—In your issue of April 22nd a case of carcinoma of the lung of unusual duration is described by Dr. A. S. Scott Pinchin. While I was house physician at the Brompton Hospital in 1915 the train of symptoms of an in-patient under the care of Dr. J. J. Perkins showed some similarity to those recorded by Dr. Scott Pinchin. The first symptoms had been noticed two years before admission, and during the patient's stay in the hospital, which extended over another year, the absence of metastatic growths and the long duration complicated the diagnosis. Prof. Shattock, to whom a portion of the tumour removed at post-mortem was sent, diagnosed endothelioma of the lung.—I am, Sir, yours faithfully,

G. C. KUSUMBEKER, M.R.C.S., L.R.C.P.

Torrington-square, London, W.C., April 22nd, 1922.

KENYA COLONY AND THE CLIMATIC TREATMENT OF TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—In your issue of Feb. 11th I read a letter by Sir Martin Conway, M.P., on the alpine treatment of tuberculosis. For some time past I have been very much impressed by the great suitability of certain parts of Kenya Colony for the treatment of patients suffering from incipient phthisis. On the plateau of Laikipia, at a height of 6000 ft., it is possible to live an open-air life all the year round. The climate is healthy and invigorating, the rainfall is 28 in. spread over four or five months, even during the rainy months it seldom rains more than a couple of hours a day, and there is an average of 10 hours daily sunshine during the year. The shade temperature even in the middle of the day is only about 70° F., and the mornings and evenings are delightfully cool. After practising here for a year and a half, I have found that there is practically no illness and respiratory disease is entirely absent. Several of the settlers who came out here suffering from tuberculosis are now strong and healthy and able to work hard on their farms. I am sure that if sufferers from incipient phthisis only realised the advantage they would derive from residence under medical supervision in a climate like this they would hasten to take advantage of it.

I am, Sir, yours faithfully,

R. A. CUNNINGHAM, M.B., B.S., D.P.H.

Rumuruti, Kenya Colony, March 22nd, 1922.

RECOVERY FROM MENTAL DISORDER.

To the Editor of THE LANCET.

SIR,—In your report (April 22nd) of the discussion at the Royal Society of Medicine the statement credited to me as to the possibly beneficial effect of sedative drugs in irritable brain conditions is not quite what I was trying to express. The blame is probably mine for not having made my meaning clear. As printed the sentence runs: "By producing stupor the excited cells might be given rest, cells of lower range brought into action, and so recovery be aided." What I intended to convey was that, accepting Hughlings Jackson's statement that it is the lower levels which are overacting because of the loss of inhibition, it is these lower levels which have to be checked in their excessive functioning. If this is done, then the higher levels which are disordered have a greater opportunity of readjusting themselves. Carried to a logical conclusion this would lead us to infer that undue interference, even though well-intentioned, may be mischievous in some mental disorders. I am, Sir, yours faithfully,

HUBERT J. NORMAN.

Camberwell House, Peckham-road, S.E., April 25th, 1922.

MINERS' NYSTAGMUS.

To the Editor of THE LANCET.

SIR,—The credit for the original discovery that miners' nystagmus is due to defective illumination of the mines is entirely due to Sir Josiah Court, of Staveley, in the county of Derby. It would appear from your editorial article (April 29th) on the First Report of the Miners' Nystagmus Committee, that the fact has been rediscovered. I have not yet read the Committee's Report and therefore do not know whether Court's researches and results are fully acknowledged, but at any rate your article does not mention the name of Court.

I am, Sir, yours faithfully,

R. P. GARROW.

Saltergate, Chesterfield, April 29th, 1922.

*** We were reviewing the Report and attempting no detailed history of the disease. Sir Josiah Court's work in connexion with miners' nystagmus is well known, and is the subject of several references in the Report, where he is also credited with being an early and earnest advocate of the theory that deficient light was the essential factor of the disease.—ED. L.

THE CORPUS LUTEUM AND THE TOXÆMIAS OF PREGNANCY.

To the Editor of THE LANCET.

SIR,—It was with considerable interest that I read the paper on the relation of the corpus luteum to the toxæmias of pregnancy in your issue of April 22nd, by Dr. Mackenzie Wallis and Dr. Everard Williams. The striking results they have obtained by using an alcoholic extract of the corpus luteum in the experimental injection of animals require serious attention, and give great promise. Before, however, we can accept the corpus luteum as the origin of the toxins of pregnancy, they will be the first to agree that much further work on all aspects of the question will be necessary. But their careful and laborious work provides a useful basis for further investigation in chemical pathology, and is highly suggestive in new therapeutic possibilities. It is well known that previous experimenters have produced visceral and vascular lesions in animals by injecting poisons, extracts of the placenta and other tissues, in addition to a clinical condition more or less resembling true eclampsia. The problem is to prove the specificity of any poison by merely comparing visceral lesions which are the common results of diverse poisons, with those of the disease under investigation.

Positive animal experiments of the nature recorded by Dr. Wallis and Dr. Williams are invaluable as an

introduction to a possibility in pathogenesis, but it will be necessary to confirm the theory unfolded by demonstrating some real nexus between the human corpus luteum and true human eclampsia. For example, appeal might justifiably be made to microscopical examination of the corpus luteum in toxæmia to show some departures in structure, size, or degree of degeneration from the corpus luteum of normal pregnant women at term. During the preceding year Dr. W. Newcomb has examined at St. Mary's Hospital six corpora lutea removed by me during Cæsarean section at term, two from cases of eclampsia, two from other forms of toxic albuminuria, and two from non-toxic women, but he assures me that so far it has not been possible to detect any points by which the corpora lutea of toxic patients could be distinguished from those of normal women. The mere size of the body is notoriously variable whether the patient be toxic or not, but it is conceivably possible, however, that either the production of the toxin is associated with changes so subtle as not to be visible microscopically, or else that the clinical symptoms are the result of failure to neutralise a toxin thrown off by the corpus luteum in every normal pregnancy. Further, if this theory be correct removal of the corpus luteum during Cæsarean section for eclampsia should have a marked and immediate effect on the course of the symptoms, for one of the commonest criticisms of the placental theory is the frequent persistence of fits after the placenta has been expelled. In the four cases in which I removed the corpus luteum one had two fits during the ensuing 12 hours, another of albuminuria with sudden exacerbation of symptoms remained in a severely toxic state with œdema and mental aberration for three days, in a third toxic vomiting of late pregnancy ceased immediately, while of the fourth I have not the notes available. The number of cases is small, but their after-history did not differ from that ordinarily observed. Many further observations on the effect of the removal of the corpus luteum are necessary before any reliable conclusions can be arrived at, and, as this procedure scarcely adds one minute to the time of the operation, the suggestion is thrown out that this should be done as opportunity offers in clinical practice.

Not the least interesting part of the authors' paper is that which deals with the effect of cholesterol in neutralising the action of the toxins. Cholesterol was suggested by Decio (*Annali di Ostetricia*) in 1913 as being the natural defence of the pregnant woman against ever-present poisons circulating in her blood. Should the experimental observation on this point be substantiated by their extended work, this also suggests still further therapeutic possibilities. Those of us who are interested in this problem will look forward to a subsequent communication by Dr. Wallis and Dr. Williams, giving their experience of a further series of experiments.

I am, Sir, yours faithfully,

ALECK W. BOURNE.

Harley-street, W., April 30th, 1922.

PERNICIOUS VOMITING OF PREGNANCY.

To the Editor of THE LANCET.

SIR,—In your issue of April 15th Mr. John S. Fairbairn suggests, in order to explain and reconcile the two different views which are held of the nature of the pernicious vomiting of pregnancy, that the condition should be classified into two varieties, one occurring in the earlier months, which is always of neurotic origin, and the other in the last two months, which is toxæmic in nature. Such a distinction cannot be applied to my cases, because four out of 29 occurred within the last two months of pregnancy and differed in no way as to their symptoms and their response to institutional treatment from the cases in which the pregnancy was of two to four months' duration. Moreover, the vomiting which occurs in the toxic conditions which Mr. Fairbairn mentions is only an incident in those diseases, just as it is in cases of appendicitis, rotation of pedicle of an ovarian cyst, degenerating fibroid or pyelitis occurring in pregnancy. But the pernicious vomiting of pregnancy is a very different condition. In the duration, persistence, and frequency of the vomiting it is unlike any other form of vomiting. It is a definite, well-recognised, and unmistakable disease, and it would be unscientific and confusing to classify the occasional and infrequent vomiting which occurs in the albuminurias of pregnancy as a variety of such a distinct condition as the pernicious vomiting of pregnancy.

It is clear to my mind that the two views of the nature of this remarkable condition are irreconcilable, for they are directly opposed to one another. According to the toxæmic theory the toxæmia, the existence of which is unquestioned, is the *cause* of the persistent vomiting, whereas it is the *effect* of the vomiting according to the neurosis theory. I think it may be safely asserted that most obstetricians at the present time are of the opinion that as a rule cases of pernicious vomiting of pregnancy are of neurotic origin, but they are not prepared to go so far as to say that all cases are of this nature. They would admit that the severest forms of the disease, with jaundice, loss of weight, tachycardia, pyrexia, &c., may be due to a neurosis only, and that during life the two varieties may be indistinguishable, but if the patient dies, they would regard the case as of toxæmic origin. Surely such a distinction is unreasonable and futile.

In your excellent leading article (April 22nd) it is stated that the fact that glucose injections were used in my cases lessens the value of the conclusions I have drawn from my experience of the treatment of this disease. I think you will agree that the objection does not hold good, when I state that glucose was not used in all my cases, that it was used in some of them before they were admitted for institutional treatment and did not check the vomiting, and in many cases that did receive glucose the patient had taken food and kept it before a glucose enema was given. Important as the question of the nature of this condition is, the question of treatment is greater. I think all obstetricians of experience will agree with the concluding remarks of your leading article, that in future the operation of induction of abortion will be very rarely performed by obstetricians for the pernicious vomiting of pregnancy.

I would add, although this is not relevant to the subject, that there are few, if any, conditions in which induction of abortion is advisable.

I am, Sir, yours faithfully,

Leeds, May 1st, 1922. C. OLDFIELD.

THE HYSTERICAL NATURE OF SO-CALLED "PERNICIOUS" VOMITING IN PREGNANCY.

To the Editor of THE LANCET.

SIR,—In Mr. T. W. Eden's letter published in your issue of April 29th he complains that I did not quote from the latest edition of his book. I have, however, only followed the example he set in his first letter, published a fortnight ago, in which he quoted from the third of his five editions. As a matter of fact, on comparing the fourth edition of 1915, from which I quoted, with the fifth and latest edition of 1919 I find that Mr. Eden's complaint is quite unjustified, as the section on vomiting of pregnancy is identical in the two, with the single exception of a sentence which reads "the urine, although diminished in quantity, from vomiting or from diminished intake of fluid, remains otherwise healthy." In the fifth edition the words "free from all blood and casts" are substituted for "otherwise healthy." This alteration does not bear in the least upon our discussion, as neither blood nor casts were mentioned by either of us, and Mr. Eden's original criticism was in connexion with the ammonia coefficient of the urine, the references to which are identical in the two editions.

I am, Sir, yours faithfully,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest, May 1st, 1922.

Obituary.

EDWARD HENRY TAYLOR, M.D. DUB., F.R.C.S. IREL.,

PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS IN IRELAND, AND PROFESSOR OF SURGERY, TRINITY COLLEGE, DUBLIN.

THE death is announced of Prof. Edward Henry Taylor, the distinguished surgeon and anatomist, which occurred on April 26th at his residence in Dublin.

Edward Henry Taylor was educated at Trinity College, Dublin, and Vienna. He was a distinguished student, gaining a surgical travelling prize as well as the medical scholarship, and graduated as M.B., B.Ch., in 1890, taking his doctorate and also the F.R.C.S. Irel. six years later. He was shortly afterwards elected demonstrator of anatomy and operative surgery in Trinity College, and assistant surgeon to Sir Patrick Dun's Hospital. His knowledge of surgery and surgical anatomy made his services as an examiner in these subjects in demand, and his treatise entitled "Applied Anatomy: Medical, Surgical, and Gynæcological," which was published in 1903, achieved a well-merited success. He was in course of time appointed surgeon to the Sir Patrick Dun's Hospital, where he also acted as secretary to the medical board, and was elected President of the Royal College of Surgeons in Ireland without opposition. A similar general testimony to his worth was earned when he succeeded Sir Charles Ball without opposition as Regius Professor of Surgery at Trinity College.

He was not a frequent contributor to scientific literature, though certain of his papers were distinctly valuable, notably one written in collaboration with Prof. W. S. Haughton upon their Researches in Cerebro-cranial Topography by means of Rontgen Photography.

Sir W. I. de C. Wheeler, Vice-President of the Royal College of Surgeons in Ireland, in adjourning the meeting of the Surgical Section of the Royal Academy of Medicine, the section of which Prof. Taylor was President at the time of his death, made the following moving speech on his dead friend :—

"The section meets under the shadow of Mr. Edward Taylor's death. He was President of the section and President of the College in which we meet. He himself would have wished us to proceed with the business before us, for the progress of surgery was near to his heart, and he knew that the published Transactions of this section did much towards maintaining the reputation of the Dublin school in Great Britain and abroad. None of us, however, will feel disposed to proceed to ordinary business on the eve of his funeral. Our minds are burdened with the loss we have suffered, and we are full of sympathy for the widow and family he has left behind.

"The profession is indebted to Edward Taylor for the demonstration of the fundamental truth that success and respect, and everything in professional life which can be considered worth while, can be obtained by taking the straight road. Success to him meant hard work and results conscientiously achieved for the good of the school, for the advance of science, and for the benefit of all. Success was his, and his efforts were crowned by recognition from Dublin University, from the College of Surgeons, and from the profession at large. Thus he became President of this College unopposed ; he was selected to follow E. H. Bennett as Professor of Surgery, and later to succeed Sir Chas. Ball as Regius Professor in the Medical School of Dublin University. He received the degree of Master of Surgery (honoris causâ) as a final tribute from the school in which he was reared. His books on operative surgery and applied anatomy breathe infinite accuracy, perseverance, and truth, and deservedly won him a high reputation in foreign lands. By his writings much was done to lift Irish surgery into the first rank. It gave a thrill of pride when travelling to find Edward Taylor's name on the lips of the great contemporary surgeons, and his works quoted by the writers of the day.

"His long illness prevented his taking part as President in College affairs, unless for a few early months of office. It was during this time I became acquainted with the personal charm and indefinable qualities which accounted for his popularity amongst those with whom he freely moved. He was open-minded and just ; if he was capable of injustice, it was to himself, for he was pre-eminently modest. He stood for loyalty in friendship ; in work he ranked coöperation high above checkmate, and vigorously assisted in every forward move. He had a quiet dignity which added weight to his words, and although he may have lacked some of the frills and flashes of genius, he was one of those men who got things done. Apart from his large circle of friends, he was able to attract and stimulate the wider circle of those about him, and this was one of his most winning powers. Outstanding ability, real work, and honest effort brought their rewards. In addition to academic honours and general respect, his qualities as a surgeon received public favour, and he enjoyed a large share of the practice of Southern Ireland. The surgical torch in this Academy has been dimmed for the moment, but this section can do honour to a memory by fanning the flame into brightness and illuminating for others the path by which the late President found his way."

Our Irish correspondent writes : "Few men have combined in themselves so well as did Taylor the diverse qualities of practical surgeon and lucid teacher. The same faculty for clear orderly thought was expressed in both directions—in speech and in operative technique. Taylor took little interest in public affairs or in medical politics. His success was due to his ability as a surgeon and his uprightness as a man, and owed nothing to influence or extraneous conditions. What leisure he could take from his profession was devoted to farming, and he was noted as a discriminating and successful breeder of shorthorn cattle."

ROBERT SHINGLETON SMITH, M.D. LOND. AND BRISTOL, F.R.C.P. LOND.,

CONSULTING PHYSICIAN TO THE ROYAL INFIRMARY, BRISTOL.

Robert Shingleton Smith, who died on April 15th at his residence in Bristol, was born in 1845 and educated at Queen's College, Taunton, and King's College, London. He was a distinguished and successful student and graduated at the University of London as B.Sc. in 1866 and M.B. in 1867. In the following year he proceeded to the M.D., winning the gold medal in obstetric medicine. After holding the appointments of resident medical officer to the St. Pancras and Northern Dispensary, medical registrar at King's College Hospital, and resident surgeon to the Bristol Royal Infirmary, he was appointed in 1873 physician to the last institution, a post which he held for 32 years, being in 1885 elected a Fellow of the Royal College of Physicians of London. In 1905 Dr. Shingleton Smith became consulting physician to the institution with which his name will be always associated.

Dr. Shingleton Smith was one of the best-known consulting physicians in the provinces, and it is interesting to note that his long and useful career was threatened with abrupt termination in early middle age when he developed pulmonary tuberculosis. His recovery, however, after a short sojourn abroad, was complete. His work as a consulting physician was characterised by its sound scientific background and its practical and sympathetic expression, so that with colleagues and patients alike his advice went far. No doubt this combination was due to his close connexion with University College, Bristol, where he was lecturer on physiology and later professor of medicine, while he acted as the organising secretary of the committee which secured the incorporation of the College as a University. For many years he was the editor of the *Bristol Medico-Chirurgical Journal*, while he also acted as honorary secretary, and subsequently as President, of the Bristol Medico-Chirurgical

Society and of the Bristol branch of the British Medical Association. To the above-mentioned journal he contributed a series of articles on the treatment of phthisis, and for the "Medical Annual" in different years he wrote on pulmonary disease and on the use of antiseptics in phthisis. He also delivered the Long Fox Lecture in 1905, taking as the subject Graves's Disease. He was President of the Winsley Sanatorium, and consulting physician to the Bristol Dispensary and the Cossham Memorial Hospital.

Mr. F. Richardson Cross, who knew Dr. Shingleton Smith for nearly 50 years, writes of him as follows: "He was an excellent teacher, his wide scientific training being of much service in the conduct of his work as a physician, and also in the activities of various scientific and other societies, where his presence was always welcome. He was very kind-hearted, and always modest, striving, with no ulterior motive, to assist the progress of learning. An incessant worker himself, he always found time to help others."

Apart from his high level of professional accomplishment, Dr. Shingleton Smith was a learned antiquary, an expert gardener, and a skilful amateur astronomer. The close of his valuable and busy life was saddened by domestic misfortune. Shortly after the death of his wife he lost two daughters, while his youngest son was killed in the war, and his second son, a medical man, died recently as the result of an accident.

THE LATE DR. H. E. FRASER.—Hugh Ernest Fraser, medical superintendent of the Dundee Royal Infirmary, died on April 20th, at the age of 59. Graduating at the University of Edinburgh in 1887, where he afterwards became junior demonstrator of pathology, he proceeded to the M.B., C.M. degrees in 1891 and to the M.D. in 1897. After qualifying, he first held a house appointment at the Royal Maternity Hospital, Edinburgh, and later became assistant visiting medical officer at the North Infirmary, Inverness. He was appointed medical superintendent of the Dundee Royal Infirmary in 1897, a position which he held till the time of his death.

ROYAL MEDICAL BENEVOLENT FUND.

AT the meeting of the committee held on April 11th 28 cases were considered and £323 voted to 23 applicants. The following is a summary of some of the cases relieved:—

Daughter, aged 47, of M.R.C.S. Eng. who practised in Hastings and died in February. Applicant is left quite unprovided for, as her late father was in receipt of a pension which died with him. Applicant requires temporary assistance while she is looking round for something to do to earn a living; she hopes to retain the furniture in the hope of procuring a small house to be able to let apartments. Voted £15.

Widow, aged 43, of M.D. Aberd. who practised in London and died last month. Widow and four children at present unable to obtain any income owing to legal delays in realising estate. The eldest son is dying of tuberculosis and requires constant attention. Some three years ago the Fund gave £5 to the doctor owing to ill-health. Voted £10.

Daughter, aged 70, of M.R.C.S. Eng. who practised in Somerset and died in 1862. Applicant has a small annuity of £31 per annum and receives help from friends, but has several bills to meet amounting to £32 and asks the Fund to help her. She has previously received help from the Fund amounting to £48. Her rent and rates amount to £18 per annum. Voted £26 towards paying off debts.

Surgeon, London and Cardiff, aged 77, was house surgeon at a hospital in Wales for 12 years. Came to London during the coal strike, was unable to secure an appointment, and had to live on the money he had in hand, amounting to £104 and sell his belongings so that he and his wife could subsist: only income, O.A.P. 10s. per week. The son is an invalid and unable to help. Rent amounts to 11s. per week. Voted £26.

Widow, aged 65, of M.R.C.S. Eng. who practised in Plaistow and died in 1908. Applicant was left unprovided for and earns a living as an office cleaner at £1 2s. 6d. a week and works from 8 A.M. to 6 P.M.; her rent and insurance cost 4s.4d. a week. Applicant is now suffering from "housemaid's knee (septic)." Voted £12 in 12 instalments.

Subscriptions may be sent to the hon. treasurer, Sir Charters J. Symonds, at 11, Chandos-street, Cavendish-square, London, W. 1.

THE King has approved the reappointment of Dr. D. J. Galloway as an unofficial Member of the Legislative Council of the Straits Settlements.

Medical News.

UNIVERSITY OF LONDON.—At a recent examination for the Diploma in Psychological Medicine the following candidates were successful: Elizabeth Casson, Francis J. Fahy, and Oscar P. N. Pearn (with special knowledge of psychiatry).

UNIVERSITY OF BRISTOL.—The following candidates have been awarded honours in the recent Final Examination for the degrees of M.B., Ch.B.: Macdonald Critchley and Percy Phillips (first-class honours); Phyllis Beames and Winifred Grace Nott (second-class honours).

UNIVERSITY OF LEEDS.—At a meeting of the court on April 26th it was decided to confer the degree of D.Sc. on Sir Charles Scott Sherrington, P.R.S., and Sir Harold Stiles.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary quarterly Comitia of the College was held on April 27th, Sir Humphry Rolleston, the President, occupying the chair.—The following were admitted to the Membership of the College: Drs. J. F. Chambers, W. Feldman, H. Gainsborough, N. H. Hill, J. G. Hislop, H. MacLean, C. T. Maitland, and W. G. Wyllie.—Licences to practise physic were granted, jointly with the Royal College of Surgeons of England, to 108 candidates who had passed the required examinations.—Diplomas in Tropical Medicine and Hygiene were granted, jointly with the Royal College of Surgeons, to 24 candidates.—The following were elected to the Fellowship of the College: Drs. E. H. Greves, Sir Sydney Russell-Wells, M.D. Lond., E. J. Maclean, A. H. Hayes, R.A.M.C., R. A. Bolam, W. H. Wynn, C. P. Lapage, E. F. Skinner, O. L. V. S. de Wesselow, J. G. P. Phillips, H. W. Barber, A. G. Evans, A. Castellani.—Dr. H. H. Dale was nominated by the Council under By-law XLI. (*b*), and proposed to the College for election to the Fellowship.—The President announced that two gifts had been made to the College: (1) The President's chair used when the College buildings were in Warwick-lane. This was offered to the College by Dr. F. Gore Wallace, who stated in his letter that it had been presented to Mr. John Charles Hunter, who was Bedell of the College from 1823–1829. (2) An apothecary's malacca cane with two small glass phials in the shaft. This was offered by Mrs. Fagg. These were both accepted, and the thanks of the College were accorded to the donors.—A communication was received from the Secretary of the National Association for the Prevention of Tuberculosis, urging that tuberculosis be made the subject of special teaching in medical schools. This was referred to the Committee of Management.—Dr. Sidney Phillips moved for the second time: That By-law LVII. be altered so as to read—"The accounts of the College shall be audited by the Finance Committee, with the assistance of a professional accountant. A copy of the audited accounts shall be supplied to the Censors' Board." This was agreed.—The present representative, Sir Frederick Andrewes, was nominated a Representative of the College upon the Lister Institute of Preventive Medicine.—A report from the Committee of Management was received and adopted.—The Committee of Management recommended that the King's School, Ely, and Bablake School, Coventry, be added to the list of institutions recognised for instruction in chemistry and physics.—After some formal College business the President declared the Comitia closed.

LITERARY INTELLIGENCE.—Messrs. William Heinemann, Ltd., will shortly publish "Influenza," essays by several authors, edited by Dr. F. G. Crookshank; "Rickets" by Dr. J. Lawson Dick; "A Clinical Treatise on Diabetes Mellitus," by Dr. Marcel Labbé; "Dosage Tables for Deep Therapy," by Prof. Voltz, edited by Dr. Reginald Morton; "Sex Problems in Women," by Dr. A. C. Magian; "Safe Marriage," by Miss Ettie A. Rout, with preface by Sir W. Arbuthnot Lane, Bart.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.—The annual congress of the Society will be held from May 11th to 13th, chiefly at the Royal Society of Medicine, 1, Wimpole-street, London, W. 1, and under the presidency of Mr. J. Herbert Fisher. On Thursday, May 11th, will take place the presentation of the Edward Nettleship Prize to Dr. H. Moss Traquair. Papers will be read during the morning; in the afternoon will be held a discussion on Industrial Diseases of the Eye (excluding accidents, miners' nystagmus, and glass-blowers' cataract). At 5 P.M. will take place the business meeting, and at 7.15 a dinner at the Langham Hotel. On Friday, the 12th, papers will be read in the morning; in the afternoon there will be a demonstration of cases and specimens at St. Bartholomew's Hospital, and in the evening pathological demonstrations at the Royal Society of Medicine. The morning of Saturday, May 13th, will also be devoted to the reading of papers.

SOUTHAMPTON: ANNUAL MEDICAL DINNER.—The annual dinner of doctors in Southampton and neighbourhood was held at the South-Western Hotel on April 19th. Nearly 50 medical men—a large proportion of the doctors of the town and neighbourhood—were present, the gathering being confined to the profession. During the evening a presentation was made to Dr. A. A. Mackeith, of Southampton, who during the war was chiefly responsible for the arrangements made for looking after the practices of those who served abroad. It took the form of a piece of plate, and bore the following inscription: "Presented to Dr. A. A. Mackeith by the Southampton doctors who served overseas in the Great War 1914–1918, as a mark of gratitude for, and appreciation of, all the work done for them during their absence by him and the Southampton medical men."

NORTH-EAST LONDON POST-GRADUATE COLLEGE.—The syllabus of a special post-graduate course, to be held from May 15th to May 27th at Prince of Wales's General Hospital, Tottenham, London, N. 15, in association with the Fellowship of Medicine and Post-Graduate Medical Association, has been issued. The fee for the course, to those who are not members of the Fellowship of Medicine, is 5 guineas (or 3 guineas for either week). Names of those wishing to attend should be sent not later than May 11th to the Dean at the Hospital or at 19A, Cavendish-square, London, W. 1, from whom further particulars can be obtained. In connexion with the course there will be lectures at 4.30 daily, free to qualified medical practitioners. The first lecture will be given on May 15th by Sir Thomas Horder, on Some Clinical Types of Arthritis and their Treatment. Subsequent lectures will be announced in our Medical Diary.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART: *Post-Graduate Course.*—A special course of systematic lectures and clinical demonstrations will be held in May and June. The clinical practice of the hospital is open to post-graduate attenders of the course, for which a fee of £2 2*s.* per month, or £5 5*s.* for three months, is charged. All inquiries should be addressed to the Dean, Dr. B. T. Parsons-Smith, and cheques to the secretary at the hospital, Westmoreland-street, London, W. 1. In connexion with the course lectures will be delivered on Mondays at 5.30 P.M., free to medical practitioners: the first of these will be delivered on May 8th by Dr. F. W. Price on Methods of Examination of the Cardio-Vascular System. Subsequent lectures will be announced in our Medical Diary.

ROYAL INSTITUTE OF PUBLIC HEALTH: PLYMOUTH CONGRESS, 1922.—This Congress will take place at Plymouth from May 31st to June 5th inclusive, under the presidency of Lord Fortescue. The committee consists of the chairman, the Mayor of Plymouth (Alderman J. F. Winnicott, J.P.) and 31 members, 13 of them members of the medical profession. The inaugural meeting takes place on May 31st at 8.30 P.M. There are four sections: State Medicine and Municipal Hygiene; Naval, Military, and Air; Bacteriology and Biochemistry; Women and Public Health. The subjects dealt with will include, among others, the unification of local health administration; prevention of tuberculosis from human sources and from bovine sources; the improvement of the milk-supply; contamination of streams with whey and dairy waste; orthopædics in relation to public health; industrial hygiene; housing; the administrative control of diphtheria; venereal disease; physical training and recreation; animal carriers of disease; the disposal of waste water; health education—a forecast; pathogenicity and treatment of flagellate dysentery; yellow fever; botulism and canned fruit; hydrogen-ion concentration in relation to bacterial growth; recent advances in the bacteriological examination of water; streptococcal infections; syphilis; toxic jaundice; the maternity hospital; the organisation and care of maternity; the preservation of teeth; vitamins; the problem of crippled and syphilitic children; sun treatment; birth control; the physiological aspect of women in industry. During the Congress on June 1st, 2nd, and 5th, at 4.30 P.M., the Harben lectures will be delivered by Prof. T. Madsen, M.D., Director of the State Serum Institute, Copenhagen, in English. The Congress dinner will be held on June 2nd, at 7 P.M., in the Royal Hotel. Visits and excursions will be arranged to the naval establishments, the municipal waterworks on Dartmoor, and other places of interest. Not only fellows and members, but any person interested in the work of the Congress may become a member on payment of a fee of one guinea. Arrangements for travelling and hotel accommodation are being made by Messrs. Thomas Cook and Son, British Department, Ludgate Circus, London, E.C. 4, to whom application should be made direct. The London offices of the Congress are at 37, Russell-square, London, W.C., and the Plymouth offices at the Town Hall, Plymouth. The honorary secretaries are Dr. A. B. Soltau, Plymouth; Mr. R. J. Fittall, Town Clerk, Plymouth; and Mr. F. Marié-Davy, 5, Avenue d'Orleans, Paris (for France).

THE KING has given permission to Surg. Rear-Admiral A. G. Wildey, R.N., to wear the decoration of Commander of the Crown of Italy, which has been conferred upon him for services during the war.

ADVISORY MEDICAL COMMITTEE FOR WILLESDEN.—As a result of the postal vote taken on May 1st for this committee the following were elected as original members:—

Consultant.—Mr. A. W. Bourne.

Practitioners.—Dr. W. Paterson, Dr. H. J. Macevoy, Dr. C. F. T. Scott, Dr. C. H. Auty, Dr. F. R. Sturridge, Dr. J. W. Brash, Dr. C. Whitehall Cooke, Dr. W. Woodley Stocker, Dr. J. B. Dunning.

Whole-time Officer or Part-time Officer not Practitioner.—Dr. Rachel Gethen.

CHADWICK PUBLIC LECTURES.—The second of two lectures on "Rural Re-Settlement and its Relation to Public Health" will be delivered in the Lecture Hall of the Royal Society of Arts, John-street, Adelphi, on May 11th, at 5.15 P.M., by Sir Lawrence Weaver, K.B.E., F.S.A, second secretary, Ministry of Agriculture and Fisheries, and Director-General, Land Department. An open-air lecture on Superstitions of Early Herbalists: Particularly the Doctrine of Signatures, illustrated by living plants, will be delivered in the Chelsea Physic Garden, Swan-walk, Chelsea Embankment, by Mr. E. Augustus Bowles, F.L.S., on May 25th, at 5 P.M.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The second of the new series of lectures arranged by the Fellowship of Medicine will be given by Sir W. Arbuthnot Lane, Bart., in the West Lecture Hall, Royal Society of Medicine, 1, Wimpole-street, W. 1, on Tuesday next, May 9th, at 5 P.M., on Fractures. The lecture is open to members of the profession. Six practical demonstrations on Gastro-intestinal Affections in Children, Skin Diseases, the Wassermann Reaction and its Importance in General Practice, will be given at the children's clinic, Western General Dispensary, Stafford-street, N.W. 1, on Mondays and Thursdays at 4.45 P.M., commencing on May 15th. The fee for the course is one guinea; copies of the syllabus and tickets will be forwarded on application to the Secretary, Fellowship of Medicine, 1, Wimpole-street, London, W. 1.

ROYAL INSTITUTION OF GREAT BRITAIN.—The annual meeting of members was held on May 1st, with Sir James Reid, vice-president, in the chair.—On Tuesday, May 9th, at 3 P.M., Sir Arthur Keith, F.R.S., will lecture on Anthropological Problems of the British Empire: Series II., Racial Problems of Africa; Lecture III.—On Thursday, May 11th, at 3 P.M., Prof. F. Keeble will deliver the first of two lectures on Plant Sensitiveness.—On Saturday, May 13th, Prof. O. W. Richardson will give his first lecture on the Disappearing Gap Between the X Ray and the Ultra-Violet Spectra. The Friday evening discourse on May 12th will be delivered by Dr. H. H. Dale on the Search for Specific Remedies.

ABERDEEN TERRITORIAL FORCE: DISBANDMENT OF MEDICAL UNITS.—The city of Aberdeen Territorial Army have received information from the Army Council that three Aberdeen units—namely, the 1st and 2nd Highland Field Ambulances, and the 1st Scottish General Hospital, are to be disbanded as from the end of the present month, as the result of the recommendations contained in the Geddes Report. One field ambulance will be retained at Dundee, and there will be only one field hospital for Scotland.

NURSING SERVICES FOR INSURED.—At a meeting of the Aberdeen Burgh Insurance Committee on April 19th the desirability of having a nursing service in the city for insured persons was discussed. It was stated that a scheme could be arranged whereby 12 nurses could be employed by the payment of 1*s.* per annum by each insured person, and it was decided to place the scheme before a conference of the committee and the representatives of approved societies to be held on May 10th. Dr. A. T. G. Beveridge, speaking of the unfortunate condition of some of the houses, said the experience of doctors was that in a house where the conditions were miserable a nurse became even more essential than a doctor.

UNIVERSITY OF ABERDEEN: GALA WEEK IN AID OF HOSPITALS.—This week has been given up by Aberdeen students to a series of efforts on behalf of Aberdeen charities, including performances of a musical comedy written by two students, and produced under their direction; an athletic gala in the grounds of King's College; a house-to-house collection in all the main thoroughfares; a torch-light procession; a sand-castle building competition on the sea-beach in the afternoon; and a fancy dress carnival in Marischal College. Last week the University jazz band toured the leading towns in the north and raised the sum of £500, while from the sale of a special hospitals' number of Alma Mater over £100 was raised.

SMALL-POX IN COLNE VALLEY.—At a meeting of the Colne Valley Education Committee it was reported that certain schools in the district had been closed owing to the discovery of cases of small-pox amongst scholars. On the reassembling of the scholars at one school after the holidays three new cases were discovered. There are now 21 cases, and the outbreak has cost the Colne Valley over £2000.

SALARY OF M.O.H. FOR MANCHESTER.—After conferences between the Manchester Town Hall Subcommittee and representatives of the British Medical Association, a report on the subject of the remuneration to be paid to the medical officer of health for the city was presented to the committee on April 26th. The report is something in the nature of a compromise; it was decided to advertise the vacant post offering a salary for the first two years of £1500 a year, of £1750 for the succeeding two years, and of £2000 after that period, if the services of the officer appointed are deemed satisfactory.

CUBAN GASTRO-ENTEROLOGICAL SOCIETY.—The Sociedad Cubana de Gastro-Enterología was founded at the end of February of the present year, and the following officials were elected: President, Dr. F. Grande Rossi; vice-president, Dr. F. Torralbas; secretary, Dr. F. Solano Ramos; assistant secretary, Dr. Pedro Barillas. The object of the society is to further all study connected with the digestive tract. Foreigners will be admitted to membership; the headquarters of the society is at Havana.

ROYAL WEST SUSSEX HOSPITAL.—At the annual meeting at Chichester on April 25th it was stated that the deficit at the end of 1920 was £949 8*s.* 7*d.*, whilst after the exercise of the strictest economy compatible with efficiency the debt at the end of 1921 only amounted to £129 9*s.* 10*d.* The new hospital year, in fact, has started free from debt, ready approval being given by the governors to the withdrawal of the deficit figure from the reserve fund. The hospital was well supported during the year in the way of special contributions, but the annual subscribers showed a falling-off. In-patients numbered 928 against 1008 in the previous year, and out-patients 1088 with 6805 attendances, against 1111 with 7410 attendances; 497 patients received X ray treatment, against 495 in 1920. The average cost per bed rose in 1920 from £104 to £141, but dropped in 1921 to £120. War pensioners numbered only 16, against 117 in 1920. The scheme for admission of paying patients, foreshadowed at the preceding annual meeting, had matured; patients' contributions had risen from £1100 to £1400.

THE EBBW VALE DISPUTE.—This dispute, to which we referred last week, has not yet been settled. The Committee of the Workmen's Medical Society have induced nine medical men to accept its offer, and the position now resolves itself into a question of free choice of doctors for the public of this district. The independent doctors who have not accepted the offer of a family rate of 13*s.* a week with an additional percentage increase if miners' wages are increased, include those formerly in the employ of the Society. The management of the works has agreed to deduct poundage from the wages of all those workmen who signify their desire to employ any of these independent doctors, and the latter have already received sufficient promises of support to show that the workmen's scheme with its "tied" doctors will have for the first time a competition which must be reckoned with. Apparently the rest of the profession in Monmouthshire fully appreciate the significance of this fight to all doctors engaged in industrial practice, and at a recent meeting the Monmouthshire Division of the B.M.A. pledged itself to do all in its power to support the independent Ebbw Vale doctors.

SOUTH-WEST LONDON MEDICAL SOCIETY.—A meeting of this Society was held on April 12th, with Dr. E. J. Pritchard, the President, in the chair, when Dr. Herbert French read a paper entitled One or Two More Clinical Points. He discussed the value of old tuberculin as a diagnostic measure in doubtful chronic chest troubles. Two injections were given with an interval of five days between them. When the reaction was positive the temperature chart gave a characteristic reading, when negative the temperature remained normal. This method of obtaining an accurate diagnosis could only be obtained in those cases where the temperature of the patient was either normal or subnormal. He next proceeded to give an account of the method for testing the efficiency of the kidneys, firstly by the amount of urea in the blood, and secondly by giving a dose of urea and then testing the urine. Speaking of true asthma, Dr. French said that a considerable amount of good resulted from an intravenous injection of peptones, the relief afforded being almost immediate and often lasting. In some patients the action was alarming at first, but no bad results ensued. A demonstration on the simplicity of venesection and transfusion followed, with a few remarks on the good results obtained.

THE office of the headquarter staff of the Insurance Department of the Ministry of Health has been transferred from Wellington House, Buckingham Gate, London, S.W. 1, to the Ministry of Health, Whitehall, London, S.W. 1.

NATIONAL BABY WEEK COUNCIL.—A meeting of the Council will be held in the Lecture Hall, Carnegie House, 117, Piccadilly, London, W. 1, on May 9th, at 3 P.M. Dr. Eric Pritchard will preside. An address on Mortality in the First Month after Birth, and the Possibility of Reducing it will be delivered by Sir Arthur Newsholme, and one on the Milk Question by Dr. Janet Lane-Claypon.

VOCAL THERAPY SOCIETY.—The King's Services Choir, formed under the direction of this society from a number of shell-shocked and neurasthenic ex-Service patients, are giving a massed choral concert to-day, Saturday, May 6th, at 3 P.M., at the Polytechnic Institute, Manresa-road, King's-road, Chelsea, London, S.W. Those interested will be welcomed.

NO. 20 GENERAL HOSPITAL.—The third annual dinner of officers of this hospital will be held on May 15th, at 7 for 7.30 P.M., at the Florence Restaurant, Rupert-street, London, W. 1. Major-General S. Guise Moores will preside. Old members of the mess are requested to apply for full particulars to the hon. secretary, Mr. Harold Drinkwater, 7, Cavendish-place, London, W. 1.

FRENCH CONGRESS OF SURGERY.—The thirty-first Congress of the Association Française de Chirurgie will be held in Paris, at the Faculty of Medicine, from Oct. 2nd to 7th, under the presidency of Prof. Henri Hartmann. The subjects of discussion will be: (1) Present results of bone-grafting; (2) late results of operations involving the main arterial trunks; (3) technique and results of extirpation of tumours of the large intestine (rectum excepted). Members of the Association are requested to send the titles of their communications before July 31st to Dr. J.-L. Faure, general secretary of the Congress, 10, Rue de Seine, Paris.

DONATIONS AND BEQUESTS.—The late Mr. William Parker, of Haverstock-hill, N.W., left by will £500 each to the Manchester and Salford Hospital Sunday Fund, London Hospital Sunday Fund, London Hospital Saturday Fund, Manchester and Salford Infirmary and Dispensary, Salford and Pendleton Royal Infirmary and Dispensary, British Red Cross Society and the Order of St. John of Jerusalem in England, and £200 each to the Manchester Deaf and Dumb Institution, Manchester Blind Asylum, Lord Mayor Treloar's Cripples' Homes, Royal Free Hospital, London, Middlesex Hospital, University College Hospital, North-West London and Hampstead Hospital, and the London Temperance Hospital.—By will the late Mr. John Gutzner Hossack left £1000 to the Charing Cross Hospital.—The late Mr. James Templeton, of Glasgow, left by will, among other bequests, £5000 to the Glasgow Royal Infirmary; £2500 each to the Western Infirmary, Glasgow, the Victoria Infirmary, Glasgow, and the Royal Hospital for Sick Children, Yorkhill; and £1000 each to the Royal Glasgow Asylum for the Blind and the Medical Mission Society, Glasgow.—By the will of the late Mr. F. C. Barker, of Boothtown, Halifax, the testator directed, subject to some small bequests, that the whole of his property of the value of £19,000 should be divided into 41 parts, out of which six are left to the Manchester Royal Infirmary; four to Crossley's Sanatorium for Tuberculosis; four to the Royal Infirmary at Halifax; three to the Northern Hospital for Women and Children, Manchester; three to Ancoats Hospital; two to Henshaw's Blind Asylum; one to St. Dunstan's Home for the Blind; one to the King's Hospital for the Disabled; and one between the Hulme Dispensary, the Chorlton-on-Medlock, Rusholme and Moss-side Dispensary, the Manchester and Salford Sick Poor Institution, the Rusholme Day Nursery, and the Manchester and Salford Lock Hospital.—The late Mr. G. Davidson, J.P., of Cults, Aberdeen, has left by will £2000 each to the Cults Convalescent Home and the Aberdeen Royal Infirmary; £1000 each to the Aberdeen Hospital for Sick Children, Morningfield Hospital for Incurables, and the District Nursing Association; and £500 each to the Newhills Convalescent Home, the Society for the Prevention of Cruelty to Animals, the Deaf and Dumb Benevolent Society, and other charitable institutions.—Mr. Frank Crossley Baker, of Halifax and formerly of Manchester, left £19,000, which he directed to be divided into 41 parts, six of which are bequeathed to the Manchester Royal Infirmary, four each to Crossley's Sanatorium for Tuberculosis, and Royal Infirmary, Halifax; three each to the Northern Hospital for Women and Children, Manchester, and to Ancoats Hospital; two each to seven other institutions; and one part each to St. Dunstan's Home for the Blind, to the King's Hospital for the Disabled, and to some smaller medical institutions in Manchester.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, APRIL 26TH.

Examination of Treatment Allowance Applicants.

Mr. KENNEDY asked the Minister of Pensions if he was aware that needless expense and trouble to ex-Service men were involved in the men who applied for treatment having to travel long distances from districts in Fifeshire to Dundee and Edinburgh for examination; and whether he would arrange to have the applicants for treatment examined by a local medical referee.—Mr. MACPHERSON replied: I am glad to inform my hon. friend that it has been decided to establish a general medical clinic at Kirkcaldy and a Deputy Commissioner of Medical Services will be stationed there. By this means the difficulty referred to should disappear.

Pensions Appeal Tribunal.

Mr. NEIL MACLEAN asked the Minister of Pensions whether any official or board of officials could award a man a final pension of a definite sum after the Appeals Tribunal had certified that he was suffering from an incurable disease attributable to service during the war; and, if so, whether he could state the regulation or article in the Pensions Act or Acts which gave them power to act in such a manner.—Mr. MACPHERSON replied: The Ministry is bound by and accepts without question a decision of the Pensions Appeal Tribunal that an appellant's disability is attributable to or aggravated by service, and thereafter awards compensation on the basis of the degree of disablement then found by a medical board to exist. When the disablement is less than 20 per cent. compensation takes the form of a gratuity or final weekly allowance, as provided by article 1 (3) of the Royal Warrant.

Disability Pensions.

Mr. ALFRED SHORTT asked the Minister of Pensions the total number of disabled officers, officers' widows, disabled men, widows, nurses, children, and dependents in receipt of pensions.—Mr. MACPHERSON replied: The approximate numbers of pensions and weekly allowances or payment are: officers, 32,000; nurses, 1400; officers' widows, 9600; officers' dependents, 6600; men, 890,000; widows, 159,000; dependents, 362,000; motherless children, 17,000. There are, in addition, allowances paid in respect of some 1,140,000 wives and children of disabled men and of 338,000 children and widows.

THURSDAY, APRIL 27TH.

EDUCATION VOTE—MEDICAL SERVICES.

The House went into Committee on a vote of £27,900,000 for the Salaries and Expenses of the Board of Education and of the various Establishments connected therewith, including sundry Grants-in-Aid. Mr. JAMES HOPE was in the chair.

Mr. HERBERT FISHER (President of the Board of Education), in introducing the vote, said that this year they were imposing a limit on education authorities. Within the limit of £62,450,00 in respect of elementary education there were certain interior limitations, and one of these—£3,100,000 for special services—included the School Medical Service and a limit of £300,000 to the expenditure on the provision of meals to school children. In 1921–22 the provision of meals reached the abnormal figure of £1,030,000. It was no part of the Government policy to curtail any expenditure which might be necessary to preserve the child population in bodily health. But while that would be the worst and most ruinous form of waste, it was their duty to realise that so vast an expansion of the eleemosynary treatment of school children as they had witnessed recently was not an educational function which ought to be borne upon the Education Vote. The inspectors of the Board of Education were not trained to check this kind of expenditure, and the Education Vote ought to be relieved of expenditure which the Board could not control adequately. In view of the great importance of the School Medical Service, and its admirable work, he should be very sorry to see any damaging economy either in the sphere of medical inspection or in the treatment or management of their special schools. The School Medical Service inspected over 2,500,000 children every year, while the attendance of the children at their clinics ran to many millions annually, but the cost to the Exchequer of all this work amounted to about 2*s.* 6*d.* per head of the 6,000,000 children in average attendance at public elementary schools. He could not give the Committee complete figures for the country, but he had figures for 24 areas, including the London area. If they compared the number of attendances of children at school clinics in these 24 areas for the years 1914 and 1920 they found that in 1914 the attendance was a little over 700,000 and in 1920 a little over 3,000,000. There had been an improvement in the cleanliness of school children amounting almost to a revolution, and a great and progressive improvement in regard to dental defects and defects of vision, while hundreds of thousands of children had had their physique and powers of resisting disease improved, with the result that in the case of some 500,000 children vast masses of subsequent disablement, sickness, and mortality had been prevented. He was happy, therefore, to think that it would be possible for the local education authorities to keep within the expenditure which would be recognised for grants without any real injury to the service. He did not say there was no field for economy in the special schools. He was carefully examining the matter, and the Board would shortly publish revised regulations which would have the effect of facilitating the reduction of the cost of schools for defectives without lessening the number of children who benefited from this form of care and treatment. He placed the schools for blind and deaf children in a special category. It was true that these schools were very costly. He did not think that they could expect much diminution in the expense of these schools, having regard to the minute and individual attention on the part of highly trained teachers which was essential to their effective working. There was perhaps no form of education which yielded so definite a return in happiness and wage-earning independence. In the other special schools the staff could be arranged on a more economical basis than hitherto.

Insanitary Conditions in Village Schools.

Major GRAY said that there were village schools in the country which were in such an insanitary condition that they ought to be closed forthwith. It was criminal to compel children to attend such schools. At a Market Bosworth Rural Council meeting the medical officer reported:—

"To be realised fully it must be seen, but I seriously doubt if more wretched and insanitary accommodation could be found in a school outside Soviet Russia. The whole place is most insanitary and is a direct menace to the health of the children, and I would ask the Council to issue a closing order to take effect immediately. This course with regard to a school is, I am aware, an unusual one, but in the circumstances it is justifiable and necessary, as it appears that the authorities responsible will do nothing to remedy this appalling condition of things, which is not only a disgrace to them, but to civilisation itself."

An official report made in May, 1921, on a school in Wiltshire, for which he could vouch, stated:—

"The condition of the offices was insanitary and offensive; two offices for 125 boys, and four for 111 girls and 40 infants. The receptacles overflowing, floors flooded. The drain from the urinal runs direct into a watercourse at the bottom of the garden. The contents of the offices are placed on a large mound in a field 40 feet from the nearest class-room window."

He had dozens of these cases where there was no water-supply laid on to the school building, no separate accommodation for the teachers, although there were men and women on the staff of the schools.

Dr. ADDISON said, while recognising the difficulties of the Minister with the smaller schools, he thought that the state of many of the schools was a disgrace to their educational system. He noted that the grants for the School Medical Service, provision of meals, special schools for defective children, organisation of physical training, evening play centres, and nursery schools were to be cut down 20 per cent. He regarded that as a most discreditable proposal. His right hon. friend could not suggest that there was any waste in regard to these services. They had at the present time half a million of children certified to be suffering from malnutrition. What was going to happen to these children? He wanted the Committee to recognise that £750,000 on these services was the biggest cut in the whole vote, and nine-tenths of the economy was to be made at the expense of the poor children's stomachs.

Provision for Necessitous Students.

Mr. ACLAND said that his experience as chairman of the London School of Medicine for Women taught him that there was not yet anything like sufficient public provision to help really necessitous and deserving students to enter university centres of education of that type. He had come across cases where a widow with, say, a fixed income of £200 or £210 a year had been able somehow to screw and pinch in order to send first one daughter and then another through a medical training. It was heartbreaking that all they could do with the assistance of the State was, perhaps, to screw out an exhibition of £10 or £15 to help the training of an extraordinarily promising student.

Reply to the Debate.

Mr. HERBERT LEWIS (Parliamentary Secretary to the Board of Education), who replied to the debate, said that the apprehensions which had been expressed about the feeding of school children were really without foundation. Not a single child would go hungry owing to the change in the arrangements. He heartily welcomed the criticisms of Major Gray with regard to the insanitary condition of some of the schools in some parts of the country. The great difficulty in this matter to a certain extent was the dual

system and the advice of the local managers. He gave the assurance that the Board of Education would be glad to go into the matter further.

Progress was reported.

FRIDAY, APRIL 28TH.

Illegal Sale of Cocaine.

Mr. RAMSDEN asked the Secretary of State for the Home Department, in view of the moral and physical damage caused by the illegal sale of cocaine and similar drugs, if he could see his way, with a view to stopping this sale, to order that 12 strokes of the cat, in addition to imprisonment for six months or more with hard labour, be given to all vendors who were caught illegally selling these drugs.—Mr. SHORTT replied: I have no power to make any such order as is suggested. The penalties are fixed by Section 13 of the Dangerous Drugs Act and cannot be altered without legislation. The maximum penalty allowed by the Act (for a first offence six months' imprisonment with hard labour, or a fine of £200 or both) ought, in my opinion, to be asufficient deterrent, and I could not undertake to intriduce amending legislation of the nature suggested.

MONDAY, MAY 1ST.

THE BUDGET—REDUCTIONS IN TAXATION.

The House went into Committee of Ways and Means, Mr. J. F. HOPE in the chair.

Sir R. HORNE, Chancellor of the Exchequer, in making his Budget statement, said that representations had been made to him, particularly by the hospitals, as to the position which had arisen out of the decision of the House of Lords in the case of Dr. Barnardo's Homes with regard to charity legacies. In that case it was held that the charity could not claim exemption from income tax on the income from residuary estate except as from the time when the residue was actually paid over. This was not a large matter, but it had occasioned a considerable amount of hardship, and he proposed to remedy the grievance. By financial arrangements which he proposed to make he would be left with a surplus of £38,300,000 for the reduction of taxation. The income tax was the tax which bore the heaviest burden, and it was the one which most affected trade. Accordingly he proposed to reduce the income tax by one shilling in the pound. The cost to the Exchequer for the full year would be £52,000,000, but he estimated that the actual cost in the coming year would be £32,500,000. The change would run as from April 6th. He had left out of his surplus something under £6,000,000. Looking to the cost of living at the present time he thought he ought to make some decrease in indirect taxation, if he could, as well as the reduction on income tax. Therefore he proposed to reduce the duty on tea by 4*d.* per lb., that was to say, from one shilling to eightpence per lb. The remission of the duty on tea involved a reduction of one-third of the duties on coffee, cocoa, and chicory. The reduction of the tea duty and its consequences were estimated to cost £5,500,000 for a full year and £5,000,000 in the present year. Sir R. Horne also announced the following postal concessions: Sunday collections to be restored; postcards to be one penny; printed papers, subject to certain conditions, to be one halfpenny; minimum charge for letters to be 1½*d.*; while a reduction will be made in telephone charges. The financial arrangements which enable the Chancellor to make these reductions and concessions include the suspension of the sinking fund. Sir R. Horne explained that in order to meet their obligations towards holders of securities the Treasury proposed to re-borrow the money for that purpose. The effect would be that at the end of the year the National Debt would not be decreased, but would be no greater. In conclusion, the Chancellor of the Exchequer claimed for his Budget the merit that in a very trying, anxious, and critical time for the commerce of the country it provided within the limits of legitimate and prudent finance as much relief from the burden of taxation as was possible, and in a form in which it was thought would be most efficacious.

In the debate which followed the Chancellor's speech the general view taken was favourable to the Budget proposals. Hon. Members thought that Sir R. Horne had done the best he could in the difficult circumstances in which he was placed, but there was a widespread demand for still further economies in national expenditure.

Mr. HILTON YOUNG, Financial Secretary to the Treasury, in closing the discussion, explained that when the Chancellor of the Exchequer said that the income tax would be reduced by one shilling it did not mean that all income tax would be reduced by one shilling in the pound. The simplest way of expressing it was that it resulted in a general reduction of all income tax by one-sixth as compared with last year, where the assessment was made on the same basis.

Several Budget resolutions having been agreed to the debate was adjourned.

Standard Content for Condensed Milk.

Captain REGINALD TERRELL asked the Minister of Agriculture whether he had considered the desirability of promoting legislation to fix a standard of content for dried and tinned milk in order that the interests of the consumer might be protected; and, in that case, what decision had he arrived at.—Sir A. MOND replied: My predecessor appointed a committee to consider the question of fixing standards for condensed milk, and draft regulations were prepared to give effect to the recommendations of the committee. It appeared, however, that there was no general agreement as to the standards to be fixed, and I, therefore decided not to proceed with the regulations. I am not aware of any sufficient reason for fixing a standard for dried milk, as there cannot be any misapprehension as to the degree of condensation of this product, and any adulteration can be dealt with under the Sale of Food and Drugs Act.

Mr. GRATTAN DOYLE asked the Minister of Agriculture what quantities of machine-skimmed condensed milk were imported into this country during January, February, and March, 1922, and how that quantity compared with the corresponding months of 1921 and 1920; and whether he was aware that the continued importation of manufactures of low-grade condensed milk was inflicting much hardship upon the condensed milk industry of England, where little or no low-grade quality condensed milk was produced.—Sir A GRIFFITH-BOSCAWEN replied: The quantity of condensed (sweetened) separated or skimmed milk imported into the United Kingdom in the first three months of 1922 was 278,230 cwts., as compared with 157,112 cwts. in 1921 and 82,901 cwts. in 1920. The proportion of this which was machine-skimmed cannot be stated. I am aware that complaints have been made of the extent to which this grade of milk competes with the condensed milk industry in this country.

Carbon Monoxide Gas Poisoning.

Sir ROBERT CLOUGH asked the Minister of Health whether his attention had been called to the frequent cases of poisoning by carbon monoxide gas; whether he had seen the statement that this was apparently due to the new type of gas manufactured; and whether, in any event, he would investigate the frequency of these cases so as to reassure the public and avoid, if possible, any further recurrence.—Mr. S. BALDWIN replied: I may remind my hon. friend that the Board of Trade appointed a Special Committee to investigate this subject, and have already given effect to the recommendation of that Committee. All cases of fatal accidents attributed to gas poisoning are reported to the Department, and reports thereon are made to them by the medical officers of health. I should add that there has not been any marked change recently in the proportion of water-gas supplied by gas undertakings.

Dental Registration Complaints.

Lieut.-Colonel CROFT asked the Minister of Health whether his attention had been called to the neglectful manner in which the dental board were dealing with applications for registry which had extended over months; whether, after letters had been sent and satisfactorily answered, the same letters as the originals were sent out by the board months afterwards; whether, instead of speedily completing the registry, applicants were kept in suspense; and what steps he intended to take to remedy this state of affairs.—Sir A. MOND replied: I have not received any previous complaints of this kind. I have no jurisdiction over the administration of the dental board, but if the hon. and gallant Member will let me have particulars of the cases to which he refers I will have inquiry made. I may add that the rules made by the board require the names of applicants to be published for a month before admission to the register.

Treatment Allowances.

Lieut.-Colonel Sir FREDERICK HALL asked the Minister of Pensions whether wounded or disabled men who were in receipt of treatment allowances if they had to absent themselves from treatment owing to illness not directly attributable to their service disability were deprived of these allowances; and, if so, whether, in view of the hardship caused by this regulation, he would consider as to its modification.—Major TRYON replied: Treatment allowances are necessarily restricted to periods during which the man, in consequence of a course of treatment recommended for his war disability, is unable to provide for his own support. Where for any period the man is unable to continue his treatment, my right hon. friend has no power to authorise allowances. In such a case the man would, of course, resume his pension.

Taxation of Ford Cars.

Captain GEE asked the Chancellor of the Exchequer whether he was aware that the tax on a Ford car was identical with a car which costs £1500; and whether, in view of the low selling prices of the former, he would consider the advisability of reducing the tax, having in view the fact that

it was a poor man's car.—Mr. NEAL (Parliamentary Secretary to the Ministry of Transport) replied: The tax on a motor-car does not depend on its value, but on its engine power as calculated under the Treasury (R.A.C.) rating. As I stated recently in the House, the whole basis of taxation of motor vehicles is to be considered afresh by the Departmental Committee, and it is obvious that a point such as this cannot with advantage be dealt with separately.

Sewage Purification Experiments.

Lieut.-Colonel ASSHETON POWNALL asked the Minister of Health whether his attention had been drawn to the discovery by Mr. Thomas H. Fairbrother, M.Sc., and Dr. Arnold Renshaw, of Manchester, of several dyes which in the activated sludge process of sewage purification could kill the devouring protozoa without harming the purifying bacteria: and whether he would give facilities for carrying out on a large scale the results of this highly important piece of laboratory research work.—Sir A. MOND replied: My attention has been drawn to the experiments referred to. I am, however, advised that further research work will be needed in order to test the application of this and other discoveries to the activated sludge process of sewage purification, and I am making inquiries as to the best means of facilitating the necessary investigations.

Unhealthy Areas.

Mr. ALFRED T. DAVIES asked the Minister of Health what amount was allotted for the current year by the Treasury in order to clear insanitary areas and upon what areas was it proposed to expend these amounts during the current year.—Sir A. MOND replied: A sum of £130,000 has been provided in the Estimates for 1922–23 to meet losses which may be incurred by local authorities in carrying out approved schemes for dealing with unhealthy areas. Such schemes have been put forward, or are under consideration, by a number of the larger local authorities, including the London County Council, and the town councils of Manchester, Liverpool, Sheffield, Bristol, Leeds, Nottingham, and Exeter.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, May 8th.

WAR: at 5.30 P.M.
Annual General Meeting:
Election of Officers and Council.

Tuesday, May 9th.

PSYCHIATRY: at 5.30 P.M.
Annual General Meeting:
Election of Officers and Council.

Wednesday, May 10th.

SURGERY: SUB-SECTION OF PROCTOLOGY: at 5.30 P.M.
Annual General Meeting:
Election of Officers and Council for 1922–23.
Cases and Specimens:
Sir Charles Gordon-Watson: (1) Notes of case of Retro-rectal Sarcoma (? Chordoma). (2) Specimen, with Notes of Independent Malignant Growths of Pelvic Colon and Rectum co-existing and causing Acute Obstruction.
Mr. P. Lockhart-Mummery and Dr. Carnegie Dickson: Microscopical Specimens and Drawings of case of Epithelioma of Anus, removed together with the Glands in both Groins and Scarpa's Triangles.
Mr. Rodney Maingot: Specimen of Rectal Teratoma.
Mr. Græme Anderson: Specimen and Notes on case of Sinus over Sacrum.

Thursday, May 11th.

NEUROLOGY: at 8.30 P.M.
Annual General Meeting:
Election of Officers and Council.
Paper:
Dr. Edwin Bramwell: Some Features of Myopathy.

Friday, May 12th.

CLINICAL: at 5.30 P.M. (Cases at 5 P.M.)
Annual General Meeting:
Election of Officers and Council.
Cases: The following will be shown by:—
Mr. Cecil Rowntree and Dr. Prentice: Posterior Rhizotomy for Gastric Crises.
Mr. Cecil Rowntree and Dr. Worster-Drought: New Growth of the Cranium.
Sir StClair Thomson: Lupus of the Palate, Gums, Pharynx, and Larynx treated by Galvano-Cautery and Tracheotomy.
Other cases will be shown.

MEDICAL SOCIETY OF LONDON. 11, Chandos-street, Cavendish-square, W.
MONDAY, May 8th.—8 P.M. Second General Meeting. 9 P.M., Annual Oration. Mr. H. J. Waring: Hospitals: Some Suggestions as Regards their Future.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, W.
FRIDAY, May 12th.—9 P.M., Dr. H. H. Dale: The Search for Specific Remedies.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.
WEDNESDAY, May 10th.—5 P.M., Prof. H. Burrows: The Results and Treatment of Gunshot Wounds of the Blood-Vessels. Hunterian Lecture (1).
THURSDAY.—5 P.M., Hunterian Lecture (2).

FELLOWSHIP OF MEDICINE POST-GRADUATE LECTURES, Royal Society of Medicine Lecture Hall.
TUESDAY, May 9th.—5 P.M., Sir W. Arbuthnot Lane: Fractures (1).

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY, May 8th.—10.30 A.M., Mr. Maingot: Surgical Pathology.
TUESDAY.—10 A.M., Dr. Paterson: Demonstration Medical Cases.
WEDNESDAY.—5 P.M., Dr. Grainger Stewart: Methods of Examination of Nervous System.
THURSDAY.—2 P.M., Mr. Donald Armour: Operations.
FRIDAY.—2.30 P.M., Dr. Pritchard: Medical Wards.
SATURDAY.—10 A.M., Mr. Banks Davis: Operations, Nose, Throat, Ear.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Ouseley-road, Balham.
THURSDAY, May 11th.—4 P.M., Mr. Macleod Yearsley: Common Errors in Diagnosis in Regard to the Ear.

LONDON LOCK HOSPITAL, 91, Dean-street, W.1.
TUESDAY, May 9th.—5 P.M., Mr. F. A. Juler: The Commoner External Venereal Diseases of the Eye. 2.30 P.M., Mr. J. E. R. McDonagh: The Rationale and Interpretation of Tests used in Syphilis.
THURSDAY.—4.30 P.M., Mr. Swift Joly: Treatment of Acute Gonorrhœa in the Male.
FRIDAY.—4 P.M., Mr. J. J. Abraham: Treatment of Gonorrhœa in the Female.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, May 11th.—4 P.M., Dr. Poynton: The Heart in Severe Anæmias in Children (free to Medical Practitioners).

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, W.
THURSDAY, May 11th.—5 P.M., Prof. G. Elliot Smith: The Anatomy of Anxiety.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART POST-GRADUATE COURSE, Westmoreland-street, Marylebone, W.
MONDAY, May 8th.—5.30 P.M., Dr. F. W. Price: Methods of Examination of the Cardio-Vascular System.
Daily, 10 A.M. and 2 P.M., Visits to In-patients and Out-patients.

Appointments.

CHARLTON, F. J., M.B., Ch.B. St. And., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Friockheim district of Forfar.

DANBY, A. B., F.R.C.S.E., Honorary Assistant Obstetric Officer to the General Hospital, Birmingham.

HICKS, E. P., M.B. Camb., D.T.M. & H., Assistant Pathologist, Municipal Council, Shanghai.

MITCHINER, P. H., M.S. Lond., F.R.C.S. Eng., Surgeon to Out-patients, St. Thomas's Hospital.

REES, H. MELVILLE, L.R.C.P. Lond., M.R.C.S., Tuberculosis Officer for the Pembrokeshire area by the King Edward Welsh Memorial Association.

REID, C., M.B., B.Ch.Aberd., House Surgeon to the Wrexham Infirmary.

STARLING, H. J., M.D.Lond., an additional Medical Referee under the Workmen's Compensation Act, for County Court Circuit No. 32.

TROUTON, NORAH E., M.B., B.S., District Resident Medical Officer, Queen Charlotte's Lying-in Hospital.

Manchester Royal Infirmary: BUCKLEY, G. B., M.B., Ch.B. Vict., Senior House Surgeon; VON MENGERHAUSEN, H. V., M.B., Ch.B. Vict., M.R.C.S., L.R.C.P. Lond., Junior House Surgeon; HELM, W. A., M.B., Ch.B. Vict., and CORFIELD, C. R., M.D. Brux., L.M.S.S.A. Lond., Anæsthetists at Central Branch.

Vacancies.

For further information refer to the advertisement columns.

Birmingham, Rubery Hill and Hollymoor Mental Hospital.—Sen. Third Asst. M.O. £400.

Bristol, Ham Green Isolation Hospital and Sanatorium.—Asst. Res. M.O. £300.

Bristol Royal Infirmary.—Hon. Med. Reg. and Hon. Surg. Reg.
Colchester, Severalls Mental Hospital.—Locum Tenens M.O. £7 7s. weekly.
Derby Borough Mental Hospital.—Asst. M.O. £350.
Dorset Mental Hospital, nr. Dorchester.—Third Asst. M.O. £300.
Greenwich, Dreadnought Hospital.—H.S. £150.
Greenwich Union.—Dist. M.O. £199 14s. 7d.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—S.
Hospital of St. John and St. Elizabeth, 40, Grove End-road, N.W.—Res. M.O. £150.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. £150.
Italian Hospital, Queen-square, W.C.—Hon. Ophth. S.
Lincoln County Hospital.—Jun. H.S. £150.
Liverpool, Royal Southern Hospital.—Hon. Asst. S.
London Homœopathic Hospital, Great Ormond-street, W.C.—A.P.
Manchester, St. Mary's Hospitals for Women and Children.—H.S. £100.
Mansfield Borough.—M.O.H. and School M.O. £864 10s.
Margate, Royal Sea Bathing Hospital.—Res. S. £200.
Metropolitan Ear, Nose, and Throat Hospital, 2, Fitzroy-square, W.—Anæsth.
Orpington, Kent, Ministry of Pensions Hospital.—Jun. M.O. £350.
Paddington Hospital, Harrow-road, W.—Asst. Med. Supt. £450.
Paisley, Royal Alexandra Infirmary.—Res. H.S.
Prince of Wales's General Hospital, Tottenham, N.—Asst. H.S. Asst. H.P. £120 each.
Royal Free Hospital, Gray's Inn-road, W.C.—H.P. £50. Asst. P.
Royal Northern Hospital, Holloway, N.—Two H.S.'s. £150 each.
St. Albans, Napsbury Mental Hospital.—Temp. M.O. 7 guineas weekly.
St. George's Hospital, S.W.—Res. Anæsth. £100.
St. Mark's Hospital for Cancer, &c., City-road, E.C.—Hon. P.
St. Mary's Hospital, Paddington, W.—Asst. M.O. for X ray Dept.
St. Pancras Borough Council, Pancras-road, N.W.—Asst. M.O. £500.
South London Hospital for Women, Clapham Common, S.W.—M.O. in charge of Massage Dept.
Southport General Infirmary.—Jun. H.S. £175.
Stroud General Hospital.—H.S. £200.
Sunderland Royal Infirmary.—H.P. £200.
Surrey County Council.—Asst. M.O. £700.
Swansea General Hospital.—H.P. £200.

The Chief Inspector of Factories, Home Office, S.W., announces the following vacant appointments: Warboys (Huntingdon); Muirkirk (Ayr).

Births, Marriages, and Deaths.

BIRTHS.

BABINGTON.—On April 18th, at Warrington Lodge, Maida Vale, the wife of Major J. W. H. Babington, M.D., late I.M.S., of a daughter.

HARDY.—On April 26th, at 43, Beaufort-road, Edgbaston, the wife of Dr. T. L. Hardy, of a son.

TIMPSON.—On April 24th, at Rendlesham, Hornsey-lane, N., the wife of G. G. Timpson, M.R.C.S., L.D.S., of a daughter,

MARRIAGES.

NICHOLSON—LONGBOTTOM.—On April 25th, at the Cathedral, Sheffield, Alexander Howard Nicholson (late R.I. Rifles), to Margaret Longbottom, M.B., B.S. Lond., second daughter of the late Dr. Longbottom and of Mrs. Longbottom, Sheffield.

DEATHS.

BEGBIE.—On April 25th, at Carlton-hill, Exmouth, after a long illness, Colonel Francis Warburton Begbie, C.B.E. A.M.S., retd., in his fifty-eighth year.

GRIFFITHS.—On April 25th, at Fulham-road, S.W., of heart failure following pneumonia, John H. K. Griffiths, M.D., C.M.

MONTGOMERY.—On April 25th, suddenly, in London, Lancelot Turtle Montgomery, L.D.S. R.C.S.

SKILL.—On April 24th, of pneumonia, at Wolverton-avenue, Kingston-on-Thames, James Maurice Skill, M.R.C.S., L.R.C.P. Lond., in his sixtieth year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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Notes, Short Comments, and Answers to Correspondents.

THE USE OF LIGHT IN HOSPITALS.

UNDER the auspices of the Illuminating Engineering Society a discussion was held on this subject at the Home of the Royal Society of Arts, John-street, Adelphi, on April 27th. The chair was occupied by the President of the Society, Sir John Herbert Parsons, and members of the Sections of Ophthalmology and Surgery of the Royal Society of Medicine were present by invitation.

In his opening remarks Mr. John Darch declared that the excellence of the modern hospital was marred by systems of lighting which reminded one of Miss Nightingale's trenchant remark that 'the very first requirement in a hospital is that it should do the sick no harm." There should, he contended, be no glare, and yet the injury resulting from insufficient light must be guarded against. Many wards had no patients' lights, and he had seen many contortions by the occupants of the beds in endeavouring to read by badly-placed lights. The lighting of a ward should be quiet and pleasing; moderate general lighting—i.e., ½ to 1 foot-candle—supplemented by local lights of 3 foot-candle power, extinguishable by the nurse when not required and situated 15 inches to the left of the patient, to light both the patient's book and the chart at the head of the bed. Local lights should also be used for the sisters' and nurses' tables. The ceilings and friezes of wards should be white, which would not tire patients' eyes if the general lighting were on the plan recommended. Walls could be of a darker and more restful colour.

Light for the Operating Theatre.

Mr. Darch continued as follows:—Only partial success had so far attended efforts to illuminate the operating table; the surgeon was still worried by the shadow cast by his own head and hands, as evidenced by his frequent use of the hand-lamp. And he had seen fittings suspended over the operating table bearing a thick coating of dust. The ideal light for operations was that afforded by a clouded sky in the open, and efforts should be made to approximate to that. The general operating theatre—as distinct from the smaller ones in relation to each ward—should be on the top floor, because of the better lighting, and lifts should give easy access to it from any ward. The brightest sector of sky was at the zenith, and the mean intensity of illumination was at an angle of 60 degrees from the table. The aim should be to secure the greatest possible angular expanse of glass throughout the length of the room, without admitting direct sunlight. The lower 6 feet of it might be of fine ground glass, to avoid distraction, with sashes to open for perflation. Artificial illumination should be not less than 25 foot-candles, and so well diffused that it would be difficult to get the shadow of one's hand on to the operation area. No light source should be exposed within the field of vision, and certainly no fittings should be used which would disseminate dust. In his view, the best way to light an operating theatre was entirely from the outside, and he exhibited on the screen a sketch of such an arrangement, showing four clusters of powerful gas-filled lamps enclosed in waterproof reflector cases, giving 25 foot-candles on the table, and nearly as much throughout the theatre. White flame arcs were excellent for this purpose. Prof. Seidentopf's method kept everything except the light outside the room, but a number of mirrors in the room required to be kept clean. He showed a photograph of a theatre lighted in this way, a powerful arc light being projected through a hole into the theatre and impinging on the system of reflectors. Local lighting, Mr. Darch considered, was best supplied by concealed lamps in a glass panel quite flush with the wall. Provision must be made for emergency lighting, but risks of failure of the light were now so much reduced that the provision of alternative fittings, each a possible dust-trap, was not justified. Half the lamps could be placed on an entirely separate circuit. Also, an electricity accumulator should be placed in another room, sufficient to maintain two or three 30 candle-power hand-lamps for several hours. Artificial daylight would be of great use for clinical and surgical purposes if a sufficiently powerful lamp could be evolved. Daylight glass held more promise, though daylight hand-lamps might be used at the bedside. He put in a final word for the dispenser, the light for whose work, both natural and artificial, was often very bad. Much could be done to relieve his eye-strain by a white screen being provided for each man. The questionnaire prepared by the Society sought opinions as to the lighting of hospitals in general, the lighting of the wards, of the operating tables, on inspection lamps, microscope illumination, the lighting of coloured objects and pathological museums, and the means of supplying the necessary light to dispensaries.

Requirements of the Gynæcologist and Ophthalmologist.

In the discussion which followed Mr. Darch's paper Prof. C. C. Choyce said that for gynæcological operations it was an advantage to have two horizontal beams of light, one coming from each side of the seated operator: also some lights behind him at the level of the table. He liked the idea of lighting the theatre entirely from the outside, but thought there would be practical difficulties, such as water getting into the lamps and damaging them in course of time. He referred to Prof. Carrell's choice of black-walled operating theatres, which he claimed avoided eye-strain. Perhaps dark green walls would be equally good, while not looking so funereal. Mr. W. T. Holmes Spicer, speaking from the standpoint of the ophthalmic surgeon, alluded to the peculiar need of a good light for this work, the most delicate in all surgery. For such operations as division of the membranes of the eye, the room was thrown into darkness and a concentrated light was thrown into the eye. This gave adaptation to the darkness, and increased the sensibility of the eye itself, at the same time projecting definite shadows, which gave the surgeon a valuable indication of his exact location. All glare and all reflections, except from the eye itself, should be excluded. The idea of operating in a dark room he believed originated with Prof. Snellen, of Utrecht, for he saw that authority employ it in 1893.

X Ray Work and Microscopy.

Mr. W. T. Jones spoke, as an engineer, on the bad lighting usually given to rooms containing the X ray installations in hospitals; he also referred to the damaging effects on lamp filaments produced by the proximity of high-tension leads and coils. The latter was remedied by placing an ordinary galvanised iron guard over the lamp. Mr. Conrad Beck spoke on the lighting of microscopes for medical purposes. It was, he said, for high powers that a good light was particularly required. When colour filters had to be used, these seriously reduced the original illumination, and the same was true of the examination of specimens which were very dense. A strong light was specially necessary when illuminating an object on a dark ground, for reliance had to be placed on the very small percentage of light which that object itself was able to reflect. The magnifying power of a microscope was reckoned as a lineal factor, so that with one magnifying 100 times, the area of the object was 10,000 times that of the original object, and the lighting would be 1/10,000 that of the image. For this work one should have the power to vary greatly the intensity of the light. Diaphragms were of no service for this purpose; the most handy method was to have a pair of neutral tint glass wedges which could be so altered in position as to absorb either more light or less. The light used for a microscope should have quite a small area: glare and flooding might entirely obliterate the view of a delicate object, and this glare was mostly due to reflections from cover-glass and slips. Daylight was the worst light which could be used for microscopes; its intensity was only 2¼ candle-power per square inch. An ideal light for microscopes was a 100 candle-power pointer-light lamp, which gave an intensity of 12,000 candles per square inch.

Various Lamps.

Mr. A. Wilson detailed the advantages of the Scialitic light for hospitals. It had, he said, been adopted by the War Office and the Admiralty. It gave a light of 3000 candle-power, and there was a heat screen which obliterated the discomfort to the surgeon due to working close to the lamp. Mr. J. B. Reiner exhibited two recently-devised lamps, one a 100 volt, the other of 30 volts; with these he showed an adapter for using artificial daylight. Mr. C. Raphael spoke of the light installation at St. Bartholomew's Hospital, and expressed his objections to lighting by indirect illumination, apart from its heavy cost. In the wards there was a plug at every bed for the examination of its occupant. He thought the lamp just shown by Mr. Reiner would prove to be ideal for operating theatres, and he hoped that gentleman would evolve one for 200 volts as well as for 100. He thought gas-filled lamps should be avoided for hospitals. The Scialitic lamp was good for operating theatres, but certain disadvantages stood in the way of its adoption at St. Bartholomew's Hospital.

THE CLOTHING OF EUROPEANS IN THE TROPICS.

IN a monograph entitled "Some Factors in Thermal Sanitation in the Tropics,"[1] Mr. G. W. Grabham, F.G.S., deals with the heat-absorbing properties of various textile materials, paints, and brick substances used in tropical regions, and describes experiments on translucency and porosity of clothing materials worn by white men, who carry with them, into climates differing widely from their own, clothing and housing conventions sometimes unsuitable for the new conditions to which they are subjected. The experiment which led to this investigation was carried out by Mr. Grabham when travelling in Kordofan during 1913. Finding a khaki shirt much hotter than a white shirt in tropical sunlight, he tested the garments by laying them on the sand in the full heat of the day; the manner in which the record fell, on transference of a thermometer from the pocket of the khaki shirt to the pocket of the white one, left no doubt of the relative coolness of the white with regard to absorption of the sun's rays. Under the white cloth the temperature rose to 55° C., but under the khaki to 67° C.; it is, as Mr. Grabham remarks, not surprising that thick spine pads have been found desirable by wearers of khaki in tropical sunlight.

Method of Experiment.

The study of absorption of solar heat by various kinds of cloth was pursued at Khartoum on similar lines; a set of clinical thermometers was used whose errors did not exceed 0·5° C. over a range from 20° C. to boiling point. Only the same set of sample cloths was used, to avoid complications due to variations in a similar pattern. Results were consistent; precautions were always taken against external influence such as transmission of heat from the surroundings. A common, local, rope-strung bedstead afforded a convenient platform standing about 50 cm. above the ground. This was covered with a doubled woollen (red) blanket to insulate the experimental cloths against heat disturbances from below. The blanket was covered with a white sheet to prevent disturbance due to absorption of solar heat by the coloured material. Most of the test-pieces were lengths of cloth obtained for the purpose, folded so that they consisted of at least six layers of cloth, and the smallest covered an area of 24 cm. × 18 cm., thus being large enough to ensure that a centrally placed thermometer was unaffected by heat transmitted from the periphery. The white background was clearly desirable; it reduced solar heating, which would certainly have affected the supernatant air. The thermometers were each inserted below the uppermost folds so that the bulbs were covered by single thicknesses of the cloth and separated from the support by at least five thicknesses of the same cloth. In opaque kinds of cloth, the number of folds below the bulb can hardly matter; in translucent kinds these additional layers must absorb rays that had traversed the outer layer.

Results.

In the following table the cloths are arranged in the order in which they were found to absorb solar heat. The percentage figure given represents an attempt to correlate the different results "in terms of the range between the hottest and coolest kinds of cloth." In individual experiments great divergence was shown in the percentages, particularly at the ends of the scale among the blacks and whites: these divergences were apparently due to surface texture and atmospheric conditions prevailing during the experiments.

	Colour and description of cloth.	Mean of three experiments. 11 A.M.–1 P.M.	
		%	T.
1	Black. Thin lining, smooth cotton, one side shiny. Dull side exposed	100·0	85·0
2	Black. Imitation serge, used for cheaper native cloaks	96·0	83·9
3	Black. Serge, used for more expensive native cloaks	92·7	83·0
4	Dark blue. "Zerak," Manchester cotton cloth, dyed in Egypt, worn by Nile boatmen	78·8	79·2*
5	Khaki. Thick drill, washed, uniform cloth of ranks of Egyptian Army	67·1	76·0
6	Khaki. Thick drill, new, same as No. 5	66·1	75·7
7	Khaki. Serge, London woollen, medium thickness	63·9	75·1
8	Khaki. "Solaro," with red-coloured inner surface	55·8	72·9
9	Khaki. Bedford cord, London, thick woollen, ribbed surface exposed	55·5	72·8
10	Khaki. Thin drill, London cotton. Officers' weight	53·6	72·3
11	Pale blue, "Lebeni," cotton, worn by craftsmen in Egypt and N. Sudan	53·2	72·2*
12	White duck. London, linen, medium thickness	15·7	61·9
13	White drill. Washed, thick cotton, used for uniforms in Egyptian Army	6·9	59·5
14	White drill. New, same as No. 13	0·0	57·6

* The blue cloths were not represented in all the experiments, but their percentages are based upon those in which they were represented.

European clothes in the tropics, Mr. Grabham points out, afford protection against disease-carrying insects, and

[1] Reprinted from the Journal of Hygiene, vol. xix., No. 3, January, 1921.

poisonous stings and bites; the question of their modification to suit the climate is of importance. The Northern European rarely enjoys his natural robustness, and has a much narrower margin of health stability—requiring correspondingly increased care of health—under abnormally warm climatic conditions. Mr. Grabham refers to evidence brought forward by Mr. Elsworth Huntingdon,[1] which suggests that white races, even if they are able to survive within the torrid zone, undergo deterioration as a result of their environment.

A NEW STANDARD ENGLISH CATHETER GAUGE.

WE have received from the Surgical Instrument Manufacturers' Association an account of the steps taken to provide a standard English catheter gauge, which shall have an equal gradation between the sizes and a definite relation gauge in general use, known as the Weiss gauge, and to the French gauge. This Association is in a position to be able to estimate the need for such a gauge; it is affiliated to the National Union of Manufacturers, has as its chairman Mr. Arthur W. Down of Down Bros., as deputy-chairman Dr. Henry T. Maw, of S. Maw, Son and Sons., and as hon. treasurer Mr. Ernest W. Mayer, of Mayer and Phelps, while its committee consists of representatives of the Medical Supply Association, Hawksley and Sons, Allen and Hanburys, John Weiss and Son, Dental Manufacturing Co., A. Young and Son, and Arnold and Sons.

The Association states that the difference between each size is based on sixty-fourths of an inch, but there is a deviation in two or three of the sizes. Other makers in producing gauges have also based them on sixty-fourths of an inch, but the deviations have not been in agreement with those on Weiss's gauge. Further, in the course of time some of the gauges in use have become worn and there has been no generally adopted standard for remedying the variations. The Association has had the matter under consideration for some time, and has now adopted the new gauge which shows very little deviation from the original gauge of Messrs. Weiss, but possesses the advantage of having an equal gradation between the sizes and a definite relation to the French gauge.

Dealing with the sizes in common use, No. 1 of the new gauge is equal to 1·5 mm. diameter, each size increasing by ·5 mm. to No. 12, which equals 7 mm. diameter. There are two sizes smaller than No. 1—namely, No. 00 = ·5 mm. diameter, and No. 0 = 1 mm. diameter—and with regard to the larger sizes No. 13 = 7·5 mm. diameter, each size above this increasing by ·5 mm. diameter to No. 30, which equals 16 mm. diameter. The complete range runs from No. 00 to No. 30 with a uniform gradation of ·5 mm. between each size, thus covering all the usual sizes for urethral instruments, the larger sizes serving also for œsophageal instruments.

Table showing Diameters in Millimetres.

No.	mm. dia.	No.	mm. dia.	No.	mm. dia.
00	= 0·5	10	= 6	21	= 11·5
0	= 1	11	= 6·5	22	= 12
1	= 1·5	12	= 7	23	= 12·5
2	= 2	13	= 7·5	24	= 13
3	= 2·5	14	= 8	25	= 13·5
4	= 3	15	= 8·5	26	= 14
5	= 3·5	16	= 9	27	= 14·5
6	= 4	17	= 9·5	28	= 15
7	= 4·5	18	= 10	29	= 15·5
8	= 5	19	= 10·5	30	= 16
9	= 5·5	20	= 11		

PUBLIC HEALTH IN BIHAR AND ORISSA, 1920.

THE report of the Sanitary Commissioner for the province of Bihar and Orissa[2] deals with a population of 34,489,846 (according to the 1911 census), the Tributary States not being included, as vital occurrences are not recorded in these areas. The birth-rate was 32·2 per 1000, compared with 30·4 in 1919 and 37·1 in the preceding quinquennium. In the district of Santal Parganas the ratio was only 22·9, while in Palamau district it was 38·4, this district having now had the highest rate in the province for ten years in succession. The death-rate (30·9) shows a most satisfactory improvement on the ratios for 1919 (40·0) and the preceding quinquennium (39·4). In the various districts it ranged from 23·2 in Singhbhum to 46·4 in Puri; in the towns, Hazaribagh had only 11·3, while Puri had 81·2, "due to floods, scarcity, and cholera." The infantile mortality was 169·5 per 1000 births, compared with 214·5 in 1919. In regard to the different classes of the community in this province, for Hindus, who form the bulk of the population (28,360,547), the death-rate was 31·8, for Mohammedans it was 27·8, and for Christians (229,824) only 16·6. Various improvements have been introduced into the system of registration of vital occurrences, including the weekly publication of statistics for all towns with a population of over 20,000, and weekly epidemic reports from all districts. In a part of the *sadr thana* of Muzaffarpur, as the result of an experimental scheme for checking the accuracy of registration that has been carried on for five years, "it appears obvious that some of the records have not been properly kept," and Major W. C. Ross, I.M.S., the Sanitary Commissioner, who presents the report now under consideration, regrets "that the experiment appears to have been a failure"; also "that the registration of vital occurrences throughout the province is inaccurate and unreliable, ... approximately one million people are not accounted for in the registration of vital statistics during the last ten years." No doubt the difficulties attendant on this matter are great, but everyone will endorse Major Ross's statement that "the accurate recording of vital statistics is essential to the effective administration of public health and to all plans and proposals for the prevention of disease."

Taking the figures as we find them, it is satisfactory that the total death-rate (30·9) is, as already stated, much below that for the preceding year and that of the quinquennium. Cholera mortality fell from 3·4 per 1000 in 1915–19 and 3·0 in the previous year, to 0·7 in 1920. The disease is endemic in the Orissa Division (2·8 deaths per 1000), where the districts of Puri and Cuttack suffered severely (4·8 and 3·5 deaths per 1000); 549 fatal cases occurred at Puri town (13·7 per 1000), and 277 at Sassaram in Shahabad district (11·9 per 1000), these being the only urban epidemic visitations. It is most satisfactory to learn that district boards and municipalities have widely adopted well disinfection by potassium permanganate or chlorinated lime. A special staff dealt with the Orissa outbreak. Anti-cholera inoculation was carried out extensively; 38,835 coolies out of 41,918 recruited by the Tea Districts Labour Association were inoculated, but most unfortunately no statistics are available as to the subsequent history of these men. Major Ross believes that epidemic cholera is associated with humidity and not with rainfall; with the aftermath of floods, but not with the floods themselves; with a definite and high mean temperature, but not with the maximum temperature; and refers to the epidemic incidence at Puri among festival pilgrims in March, June, and July; and the later rise during October and November, associated with the drying up of the rice fields and the aftermath of floods. "When circumstances favour the infection of water, and as a general rule in the majority of small localised outbreaks, the disease is probably usually waterborne; but when the disease becomes seasonally epidemic, it does so largely at the time of year when the mean temperature and the humidity are both high, and when these two conditions are most favourable to the rapid multiplication of flies." He believes that good conservancy and rapid removal and disposal of excreta are as important as provision of pure water-supplies. The "average number of cholera deaths during the last ten years in the province" is stated to have been 99,333.

There were 23,001 deaths from small-pox, giving a ratio of 0·6 per 1000, compared with 0·2 in the preceding quinquennium. The highest ratios were in Patna district (2·7) and Palamau (2·0); in the city of Gaya the ratio was 4·3. This is the second year in succession that the small-pox death-rate has increased in this province. It is noted that the vaccination staff have, during the last two years, found increasing difficulty in carrying on their work; partly due to economic conditions, and partly to political agitators, who advise people not to get vaccinated. No one would raise any objection to these persons refusing vaccination for themselves, but under the conditions that obtain at present it is the children that are being sacrificed, for whom the public health administration is responsible. Experimental anti-malarial measures have been carried out in two small selected areas in Purnea district; but after having been in operation for three years "the results are neither satisfactory nor instructive." Further investigations are in progress with regard to mosquito breeding-places. Spleen examination was carried out by Dr. S. N. Tiwari among children under ten years of age in five districts, 53,122 being examined in 1727 villages; 7·05 per cent. were found to have enlargement; in Patna district only 1·13 per cent. were affected; in Shahabad and Hazaribagh, 9·38 and 9·39 per cent.; and in Palamau 26·50 per cent. Major Ross, who considers malaria to be the most important disease in the province, throughout which it is endemic, does not favour quinine administration as a preventive, but advocates (as carried out in Italy) a combination of "agricultural improvement with sanitation, by draining or flooding marshes and wet lands in a scientific manner, so as to produce larger crops, at the same time as to prevent the breeding of mosquitoes and the spread of malaria. . . . This policy is possible, and it is productive. . . . It improves the health and the prosperity of the people at the same time."

Plague caused 19,108 deaths in the province (0·5 per 1000), compared with 0·4 in 1919 and 0·9 the quinquennial average.

[1] E. Huntingdon: "Civilisation and Climate," Yale, 1915.
[2] Patna, Superintendent of Government Printing, 1921.

Orissa and Chota Nagpur Divisions (except for 64 deaths in Hazaribagh and 5 in Palamau) were free from the disease; the greatest prevalence was in Darbhanga and Patna districts (1·7 and 1·6 deaths per 1000). Major Ross considers that evacuation is the only measure of real practical value. He prefers improved housing and better sanitary conditions "which will permanently separate the people from the rats which at present live with them," to rat-killing, disinfection, or inoculation. Against the evacuation policy, by which the people evacuate the houses (and leave the rats in them), he advocates compelling the *rats* to evacuate the houses, and leaving the people in them. As shown in an accompanying chart, both in 1920 and in the decennium, the epidemic period begins in December, attains its maximum in March, and declines rapidly in May. With regard to respiratory diseases (death-rate 0·2 per 1000, the same as the decennial average) Major Ross remarks that the heading "does not show the large number of deaths that have been caused by the secondary pneumonia of influenza. The deaths reported from fevers, however, show an abnormal rise this year during the months of March, April, and May, which is almost certainly due to the erroneous reporting of influenza deaths under this head. Of respiratory diseases, influenza is at present the most important, because it has recently been the most prevalent." Influenza, however, is a specific infection, and would not be included under respiratory diseases; neither should a secondary pneumonia be so returned. Dysentery and diarrhœa caused 30,595 deaths (0·8 per 1000, compared with 0·9 for the decennium); there was an excessive prevalence in Puri and Cuttack districts in Orissa, where the ratios were 8·1 and 5·2 respectively; in the town of Puri the mortality was 16·4 per 1000. From investigations carried out in the Patna lunatic asylum, in jails, and among the mining population at Jharia (Manbhum district), it appears that from 50 to 70 per cent. (of the persons examined) were infected with hookworm disease; cure is easily effected by proper treatment (as has been proved by campaign work in the tea gardens, and in America). An alteration in the habits of the people, so as to make the use of latrines universal, is required to prevent the continuous and rapid reinfection of the general population. At the Jharia mines 400 cases were treated successfully; 24 patients suffered from night-blindness, which disappeared after a few days' treatment. In concluding his valuable report Major Ross sums up the essential factors for sanitary progress in this province as (1) economic improvement, (2) education of the people, and (3) legislation; the first steps to be taken being the formulation of a definite public health policy and the organisation of the necessary administrative machinery.

(To be concluded.)

AN OPTICAL SONOMETER.

Messrs. Adam Hilger, Ltd., astronomical and optical instrument-makers, call our attention to an instrument which they have put on the market for recording the pressure variation caused by sound waves, and thereby assisting the diagnosis of defects of voice production.

The sound wave is received by a horn attached to the diaphragm box of the instrument; this box contains a diaphragm, of which the inner face is silvered or gilt—silver giving a better reflection when untarnished, but gilt being more durable. Light is directed from the light source by a condenser through a slit, and brought to a focus on the diaphragm. Two lenses form an intense point image of the slit on the photographic paper (or film) on a revolving drum, so that when the drum rotates a record of the deflection of the diaphragm is made. Adjustment is provided so that the spot of light may be focused on the drum at any distance from 4 to 20 inches according to the amplitude of vibration to be dealt with. The recording drum takes celluloid or paper film 1¾ inches wide. For general use the paper film will be found sufficiently sensitive, but when the amplitude is large, and the waves of high frequency, standard cinematograph film is preferable for its superior speed and orthochromatic quality—which also renders it more suitable for use with the gilt diaphragm. The drum is enclosed in a light-tight box and provided with an automatic shutter arranged to expose from one-sixth to one complete revolution of the drum as desired; thus from one to six records can be made on one film according to the length it is desired to expose. The drum takes 37 inches of film, and is driven by a reliable spring motor provided with a speed indicator. The speeds shown are, however, only to be taken as a rough guide, and when accurate timing is required a time-marker should be used. This time-marker consists of an electrically-driven tuning-fork (placed at some distince from the apparatus in order to guard against interference with the sound to be recorded); a small mirror on the fork reflects light, taken from the light source of the recording apparatus, back to the drum, where it is focused near the edge of the film: the two sets of variations are photographed together, and thus an accurate time reference is secured.

RANYARD NURSES.

THE report for 1921 of the Ranyard nurses, a body of fully-trained hospital nurses who devote their lives to nursing the sick poor in their own homes, chronicles their experience that the wonderful weather of 1921 seems to have reduced the amount of sickness to a considerable extent. Statistics of the number of cases and visits are thus slightly below the average; however, the work of a district nurse is not measured by the number of cases, but by the wisdom of her advice and the efficiency of her help in the solution of domestic problems. The Ranyard Mission has not escaped financial anxiety. In fact, the nursing work would be almost at a standstill were it not for the large sum received in legacies to the General Fund in 1920 (the greater part of which has been used to meet the deficit on the Nurse Fund) and the grants administered by the Central Council for District Nursing in London. The deficit is due to the necessary increases which have been made in the salaries in order to bring the standard up to that of the Central Council—viz., £63 a year, over and above a reasonable allowance for board, lodging, laundry, and uniform. The cost of each nurse is now reckoned at £175 a year. Three districts have been closed during the year: In New Barnet there was not sufficient work for a full-time nurse; in Kensal Rise the appointment of nurses by the urban district council appeared to meet the need; and Victoria Park was an area which could be provided for by the East London Nursing Society. A new district has been opened in Balham and a Ranyard nurse was supplied to a new school treatment centre in North Lambeth. Close touch with the Central Council for District Nursing in London has been maintained, and the Council has been negotiating with the approved societies for benefit out of their surplus funds. The Ranyard nurses are joining in the scheme arranged between the Queen Victoria Jubilee Institute and certain approved societies, whereby payment is to be made at the rate of a shilling a visit for the nursing of members. Eight nurses have left and 17 nurses have joined the staff during the year.

MATERNITY AND CHILD WELFARE IN INDIA.

DETERMINED efforts appear to be in progress to improve the conditions of childbirth and nurture in India. In the first annual report of the Lady Chelmsford All-India League for Maternity and Child Welfare it is stated that suitable accommodation has been placed at the disposal of the League in Simla and that its President, Lady Reading, is in negotiation for permanent quarters at Delhi. Under the scheme for training health visitors at the school established in Delhi, 26 students have passed through the school, of whom 15 have obtained posts. Madras Presidency has drawn up a scheme for the training of health visitors, and Lahore expects to open a school in October of this year. Of the other objects of the League, propaganda is well maintained and it is noticeable that the accounts of the journal of the League show a credit balance. The preparation of a travelling exhibition has been taken in hand. In the formation and establishment of branches of the League, the main object has been to stimulate, assist, and coördinate local efforts, not to supersede them. Welfare centres were inaugurated during the year in Calcutta and Dacca. During 1921, the organising secretary, Dr. Lilian Wemyss Grant, made a lecturing tour on behalf of the League and was well received in Madras, Bombay, Calcutta, Nagpur, Bhopal, Jodhpur, Jamshedpur. It would appear that the scope of the work is being tactfully and systematically enlarged and that the evil conditions which exist in many parts of India may be gradually supplanted by more hygienic ones through its agency.

THE "DACCOL" VACCINE BOTTLE.

THE safest and surest form of hypodermic medication is obviously the sealed glass capsule the contents of which are used in whole or part on a single occasion only. No risk of contamination then arises. Where it is necessary to use repeatedly from the same stock, various methods have been devised for bottling a quantity of fluid for hypodermic use, to be tapped on the time-honoured principle of "Dutch drops." We owe to Sir Almroth Wright the simple expedient of a rubber cap dipped into melted paraffin after pucture by the needle. The Drug and Chemical Corporation, Ltd., of 41, Lower Kennington-lane, London, S.E. 11, have called our attention to the "Daccol" safety-cap for vaccine bottles, which consists of a composite triplex rubber disc the upper and lower surfaces of which are of vulcanised rubber sheeting with a layer of spongy rubber between. The disc is secured in position by means of an aluminium cap firmly fixed upon the bottle neck. The setting of this cap cannot be disturbed and the rubber disc is absolutely self-closing after puncture. It is claimed for the "Daccol" cap that it does not perish like ordinary rubber and that nothing short of wilful interference can expose the vaccine to risk of contamination. We find the device to be simple and effective.